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MEMORY - EFFICIENCY
AND HOW TO OBTAIN IT

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By
J. LOUIS ORTON

> *"Learning without thought is labour lost; thought without learning is perilous."*—CONFUCIUS.

Fourth Edition

THORSONS PUBLISHERS LTD.,
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DEDICATED

TO

MY TWO SONS.

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PREFACE TO THE FIRST EDITION

When, at the beginning of this century, I commenced my hypnotic investigations, I found that Memory was a subject that, on various grounds, demanded particular scrutiny. Certain of my conclusions in that direction were briefly embodied in my book on *Rational Hypnotism*—as contrasted with transcendental mysticism. Since then, a considerable portion of my professional work has been devoted to educational hypnotism, and the establishment of memory-efficiency has been to the fore—especially in relation to the aspirations of examinees. Throughout, however, I have endeavoured to be thorough; and, therefore, have not excessively restricted my measures to those of an hypnotic nature. I have imparted whatever information I deemed advisable for procuring the best possible results in each individual case. Knowing that fact, my publishers asked me whether, if practicable, I would at their invitation write a book intended for the *many*; and I agreed.

I do not assert, or believe, that this, or any other book, can altogether take the place of such help as could be given in person, and with a knowledge of the characteristics and especial needs of each individual; nevertheless, something definite and useful can be done to help the many, and my aim has been to fill this book with as much as possible of that something. Independent of actual counsel, I have endeavoured to arouse and stimulate reflection calculated to foster memory-efficiency *automatically*.

J. LOUIS ORTON.

21st September, 1936.

PREFACE TO THE THIRD EDITION

In view of the numerous memory-systems largely advertised, and of my expressed opinion as to their inevitable shortcomings, I am grateful—and I have reason to believe many of my readers are, too—for the frank way in which reviewers and editors have made known what they deemed the wide utility of this book. Further, I am gratified (especially considering the high cultural development and almost unequalled educational proclivities of the Finns) that Messrs. Werner Söderström Osakeyhtiö of Helsinki hastened to procure the sole rights of translation into Finnish—" satisfied," declared these eminent publishers, " of the excellent qualities of this work." The Finnish translation, published in due course, is by V. Arti.

I was glad to learn from Messrs. Thorsons Publishers Ltd. that the extent of the sale of the book (in English) at the present time made imperative (despite restrictions on purchases of paper, and scarcity of labour) the printing of a third large edition. Apart from my own interests, I feel that the sedulous study of the book will be doing something—however little that may be—towards preparing humanity to face bravely and wisely the stresses and duties of the present, and of that period of national and international reconstruction which lies ahead. Memory-efficiency, I would emphasise, has a powerful bearing upon every phase of intellectual, moral, and even physical activity.

J. LOUIS ORTON.

6th May, 1940.

PREFACE TO THE FOURTH ENGLISH EDITION

I AM gratified to learn from the enterprising publishers of this book, and from prominent retailers, that members of His Majesty's Forces evince in it much interest. Reverting to the second paragraph of the Preface to the Third Edition, I venture to add that, in view of the promises being made so lavishly regarding the post-war period, a useful hint may be taken from the *Koran*. Mohammed enacted that his followers should endeavour to have in writing particulars of debts incurred. If that measure were impracticable, there should be called as witnesses two neighbouring men, or one man and two women—for, should one of the women mistake, the other woman—Mohammed shrewdly added—*would cause her to recollect*. Remembering what occurred after the war of 1914-18, and la Rochefoucault's aphorism " We promise according to our hopes, and perform according to our fears," it is to be hoped that the promised will, if necessary, *cause* the promisers to recollect. Memory-*Efficiency*—eh?

J. LOUIS ORTON.

" KINGSTHORPE,"
HAWTHORN DRIVE,
WILLOWBANK,
adj. UXBRIDGE (MIDDLESEX).
29th January, 1942.

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CHAPTER I

WHAT "MEMORY-EFFICIENCY" MEANS

> ". . . . such persons look upon the powers of the mind, as a kind of sleight: the ways and means of which are unknown and immeasurable."—DR. JAMES RUSH, *The Philosophy of the Human Voice* (1827).

CICERO, the greatest of Roman orators, declared memory to be the treasure of the fool. Sophocles, the great Athenian dramatist, called memory the queen of things. They were both right. Cicero was referring to the *in*efficient memory, Sophocles to the efficient.

A sixteenth century philosopher, Henry Cornelius Agrippa, well wrote: "It is a childish triumph to boast of a great memory; besides that it is a thing of shame and disgrace to make a show of great reading, exposing a great fair of words without doors, when the house within is altogether unfurnished."

Some persons have had remarkable memories who have been almost idiots. These unfortunates had not the advantage of the light of reason.

Memory is perpetually in action; without it, experience would be useless; we could not reason, nor judge, nor conjecture, nor even imagine. We should be without the requisite materials. Memory is therefore as indispensable to moral as to intellectual guidance and culture.

Without some degree of memory-*efficiency* many necessary things are left undone. Whatever one's business or profession, memory-efficiency is of paramount importance.

Dr. Samuel Johnson wrote: "We owe to memory not only the increase of our knowledge, and our progress in rational inquiries, but many other intellectual pleasures. Indeed, almost all that we can be said to enjoy is past or future; the present is in perpetual motion, leaves us as soon as it arrives, ceases to be present before its presence is well perceived, and is only known to have existed by the effects which it leaves behind. The greatest part of our ideas arises, therefore, from the view before or behind us, and we are happy or miserable, according as we are affected by the survey of our life, or our prospect of future existence."

Fact justifies us in going further: When a stone is thrown into a pool, a splash occurs, and rings, of larger and larger size, gradually spread out around. That is an example of mechanical persistence. But in living matter lie the capability and propensity to retain impressions and to *revive* them. Such a function is possessed by even the humblest of living organisms; and, under ideal circumstances, every one of the numberless cells of which one's body is composed, administers to the well-being of the body-commonwealth as a whole, of which the brain is the headquarters. Every organ and every vital process is represented in the structure of the brain by special centres and groups of *neurones*, or nerve cells, having direct communication with those organs and processes, and also the capability of controlling them in a considerable measure. Every cell gives evidence, by its behaviour, of intrinsic intelligence; and intelligence necessarily implies memory. Memory is a biological necessity, an essential of all organised forms of life.

Please do not misunderstand me. In saying that a cell, or other subordinate form of life, possesses memory and intelligence, I do not mean that those processes are accompanied by what we ordinarily know as "consciousness." Viewed from the physiological standpoint consciousness is dependent upon the presence and functioning of the uppermost of the seven layers of which the grey matter comprising the cortex of the brain consists. This layer is called by histologists the "supra-granular layer." At birth it is about half of its ultimate thickness, whereas the layer immediately beneath, called the "infra-granular layer," is three-quarters—it is concerned with animal and instinctive reflexes.

The number of neurones in the supra-granular layer is calculated at little less than ten thousand million in a normal person. It is held that these do not multiply, but, in developing in accordance with their functioning, they alter from their originally more or less rounded form. In mentally deficient persons the supra-granular layer remains of considerably less than average thickness.

Professor William James computed that, usually, only about ten per cent. of the potential mental capacity, and thirty per cent. of the physical, are developed in an individual.

Memory-efficiency includes, in considerable degree:—

1. Facility of observation, apprehension, and acquisition;
2. Durability or permanence of impressions;
3. Fidelity in revival; and
4. Serviceableness, the required impressions being resuscitated just when needed—that is to say, not merely because consciously wanted, but because the resuscitation at this or that particular moment is valuable.

The disadvantage of forgetfulness at crucial moments is a common, and naturally regretted, experience.

It is the absence of spontaneous remembrance of the right thing at the right moment that prevents useful invention in persons otherwise capable.

Some persons are afraid of attempting to improve their memory; they say that they might thereby lose their originality. Persons of that type rarely, if ever, have exhibited much originality. Indeed, the amount of really original thought that passes through even the best of minds is not likely to be very large.

There are individuals who seem, at first sight, to be so inefficient in regard to memory that they might say with a character in one of the dramas of Terence: "I am full of chinks." Closer observation of such individuals is usually sufficient to show that the defect is due to negligent, slipshod thinking. The notion, commonly held by such persons, that they require a memory-*system* is likely to have resulted from having read glowing testimonials given to advertised memory systems by persons who rose to fame without the ostensible aid of the systems. Nevertheless, one and all of these successful persons employed memory-*method*, although in many instances they did not analyse or, perhaps, even realise it.

I shall have more to say later regarding memory-systems. Certain artificial devices have value occasionally, but elaborate systems can be worse than useless. Francis Bacon declared that whoever relied upon a complicated memory-system resembled a tight-rope walker so intent upon keeping his equilibrium as to be unable to attend to anything else.

Dr. Samuel Johnson declared: " Few have reason to complain of nature as unkindly sparing of the gifts of memory." I believe that the observation was just, and that *sound method* is a great essential.

Memory-efficiency primarily depends upon physical conditions, permanent and temporary. It cannot be attained by an idiot, or an imbecile, or a moron; and extremely debilitated persons are, for the nonce at any rate, unable to supply or afford the physical energy essential. In this book I shall detail principles—physical and mental—that underlie what I consider sound method in memory-cultivation and utilisation. If, in the process, I should, perchance, be deemed tedious at times, I would at least merit an apology, or vindication, similar to that of the knight of old in reference to his slow-pacing steed: " Hee is a rite gude creetur, and travels all the ground over most faithfully."

CHAPTER II

A GLANCE AT MEMORY MECHANISM

" All that which is past is as a dream; and he that hopes or depends upon time coming, dreams waking."—FRANCIS BACON

To Plato and Aristotle, those two great pupils of Socrates, " memory " meant only the conservation of mental impressions, and those philosophers compared it to a wax tablet whereon characters were written or impressed. By Cicero, " memory " was viewed as a kind of storehouse wherein articles are arranged in pigeon-holes. Gassendi (born 1592), more ingeniously, compared it to a piece of paper or cloth, which, it should be observed, is capable of receiving numerous folds, and the folds in which it is oftenest laid tend afterwards to repeat themselves. A modern analogy to memory has been sought in the mechanism of the gramophone. But all such analogies are prone to be misleading, memory being a function of *living* tissue.

At one time the vague notion was widely held that memory consisted in storing up images in some part of the brain, and separate from where the original impressions were made; and that in *seeing* an object one part of the brain came into action, and in *remembering* it a different part. Allied to that notion is the phrenological doctrine of " faculties "; and, although, in my book on *Personality*, I have shown that phrenology is inconsistent with well-established physiological and psychological fact, I feel that, to avoid confusion, I should not here omit to point out the main fallacies involved.

When I was six years of age my parents took me, for examination, to a then very famous phrenologist, "Professor" L. N. Fowler. I mention that fact because he described me as "honest, truthful," and as "feeling the force of moral obligations." Indeed, Fowler's characterisation of me was so favourable as to surpass anything else of the kind I have ever seen, so (as I think you will admit) I cannot have any personal bias against phrenology. The main point, however, was that, on the Professor's showing, not only was I very conscientious, I was also possessed of a remarkable capacity of judgment. Well, my judgment, such as it is, I applied to the examination of phrenology; and the pertinent question arises: "Was Professor Fowler *right*, or *wrong*, in his delineation?" If *right*, my condemnation of phrenology is just; and if *wrong*, phrenology is unreliable. So either way, phrenology stands condemned by one of its most celebrated exponents.

The notion of a special part of the head being allocated to "memory" was held by Avicenna, or Ibn Sina, an Ispahan physician, who died in 1037. He, however, as did Albertus Magnus and Gordon (of Montpelier), in the thirteenth century, located "memory" in the posterior region of the brain whereas Gall, Spurzheim, and all other phrenologists, have located it in the forehead. Phrenologists say that an evidence of the correctness of their allocation is afforded by the habit some persons have of rubbing the forehead when ardently endeavouring to recollect; whereas the predecessors of the phrenologists referred, as similar evidence, to the habit of scratching the back of the head.

In point of fact, the brain never exactly fits the skull; there are cranial cavities, and these vary considerably in size, shape, and position, in different individuals; the bones enclosing, or otherwise adjacent to the brain vary in proportion, too; and whether a part of the brain devoted (according to phrenologists) to some one or other " faculty " extends outwards, or grows inwards, or sideways, or is encroached upon by parts devoted to other " faculties," could not possibly be decided by external examination of the skull.

Even were the notion of " faculties " entertained, it would not support the ostensible science of bumps.

Pathology and experimentation have revealed that certain portions of the brain respectively tend to become associated with certain specific functions. Thus, destruction of one part of the brain causes blindness; destruction of another part—deafness; of another part—inability to perform some one or other specific movement; and so on. Adequate reasons exist for concluding that the brain works in *patterns*, and that each pattern brings into action various groups of *neurones*. In the light of that conception of brain action, explanation is afforded as to why injury to one neurone group, or more, may abolish functions that may be restored by some other neurone group coming into action as a substitute.

The consideration of intricate performances such as reading and the playing on a musical instrument is both interesting and instructive. The expert in each case is mainly concerned with the sentiment he would express. He is less conscious of the words or music, and barely conscious of the letters or notes, and of the movements of the organs of speech, or of the fingers. Cases are recorded of pianists who despite having fainted continued to play for a few moments. The adduced facts evidence that consciousness gradually shades into unconsciousness, and that attention in one direction evidences distraction from another direction. "The mechanism of consciousness," Ribot remarks, "is comparable to that of vision. Here we have a visual point, in which alone perception is clear and precise; about it is the visual field in which perception is progressively less clear and precise, as we advance from centre to circumference."

The secret of expertness in any acquirement demanding dexterity lies in the construction of serviceable, and the severing of hindering, associations. The possibility of establishing such associations shows that a tendency to coherence exists, which, indeed, as all experience shows, extends to physical actions as well as to mental states. Looked at from the physiological standpoint, one must conclude that each impression makes a slight change in the nervous tissue. In that way, tracks are eventually established—hence the "patterns" of which I spoke.

Here I should emphasise the fact that the various mental activities are not truly isolated, each is associated with every part of the individual mind—is but a partial modification of the general activity, and excites other activity in proportion as the two modes have belonged, and belong, to the one whole activity.

The statement that consciousness is a *condition* of part of the mental mechanism, is equivalent to saying that there is a *background*. This background consists of instinctive tendencies and, in addition, effects of innumerable past thoughts, the results of which in the form of nerve action and impulses are perpetually influencing present thoughts, feelings, and decisions. Of this phase of my subject, I shall have more to say in my next chapter.

Memory is often described as consisting, essentially, of learning, retaining, and recalling; but I am of opinion that such a division is hardly correct, and that due recognition of the fallacy implied is of supreme importance to a just conception of my subject. I propose, therefore, to describe two or three experiments from which, I conceive, the truth will become evident.

View a face or other object, close your eyelids, and then choose some small portion (in the case of a face, say—for instance—a part one inch to the left of the tip of the nose) and attempt to picture, mentally, its exact appearance. Open your eyes, and compare what you remember of the conjured-up impression with the original. You will find that the real and the imaginary did not correspond. You can therefore be sure that if you merely referred to mental imagery conjured-up again and again, the results would not, except from possible coincidence, become more and more, but less and less, like the original. If, however, you closely view and review the original and thereby attempt to check off in what respects your mental pictures correspond to the original, and in what respects they differ from it, a gradual improvement is likely to occur in the capability of imagining what you saw.

In the first experiment you merely have varying mental imagery to rely upon, but in the second experiment, repetition, in effect, of an impression like the first. I say " in effect " because even the slightest deviation in position makes the subject of the experiment appear a little different, and slight deviations are inevitable though you may conduct the experiments most carefully.

In my book on *Rational Hypnotism*, I wrote: " Taking into account that nervous impressions act and react on one another, and that the brain is affected by nutrition and other agents, it seems extremely probable that memory-images are never exactly revived—that something is taken away and something added."

When you use speech in memorising a poem or song you do not, in the repetitions, reproduce exactly the same impressions—not even the same tones, and not even the same words! True the symbols may correspond, but the number of vowel and consonantal sounds is infinite, each shading into another, like the colours of a rainbow. Vowels continually undergo modification according to pitch and mood. The mental pictures that occur alongside words vary with each and every repetition.

If you play a piece from memory, you do not run over exactly the same track that you made originally; nor are any two performances exactly alike. What you play may be in accordance with what is written (that is to say, it may be note perfect), but expression does not exactly correspond in any two instances.

Dr. John Abercrombie, in his celebrated work (published in 1830) on *The Intellectual Powers*, related the following: "In the church of St. Peter at Cologne, the altar-piece is a large and valuable picture by Rubens, representing the martyrdom of the apostle. This picture having been carried away by the French in 1805, to the great regret of the inhabitants, a painter of that city undertook to make a copy of it from recollection; and succeeded in doing so in such a manner, that the most delicate tints of the original are preserved with the most minute accuracy. The original painting has now been restored, but the copy is preserved along with it; and, even when they are rigidly compared, it is scarcely possible to distinguish the one from the other. I am not aware that this remarkable anecdote has been recorded by any traveller; I am indebted for it to my friend the late Dr. Duncan of the university of Edinburgh, who heard it on the spot and saw both the pictures."

It is doubly interesting to note, in this connection, that so generally reliable a writer as Dr. W. B. Carpenter remarks, in his *Mental Physiology*, after quoting the foregoing anecdote from Dr. Abercrombie, that the achievement recorded "would be almost too wonderful for belief, if it had not been vouched for by so trustworthy an authority as the late Dr. Duncan." However, readers will see, on comparing the statement with Dr. Abercrombie's, that Dr. Duncan vouched for the existence of the two pictures, and not for the truth of the anecdote he related. Every great picture is likely to be copied, and, conceivably, the copy of the picture by Rubens may have been made before the original was lost. The name of the copyist is not given, and perhaps his creative ability lay in a direction other than painting! Conceivably, though, the anecdote was a creation that, in the manner of legends, grew around the pictures. In a matter of the kind, one has to judge from the degree of probability, and the optional explanations are each more likely than the quoted explanation. I cite the case because (1) it was given in support of a theory which I hold is untenable; (2) one of the narrators palpably slipped into an inaccuracy, and (3) neither seems to have realised how readily the story might have been concocted.

It is interesting to quote in this connection an account, by C. E. M. Joad, who cites *Public Opinion* by Walter Lippman. " At a Psychology Congress held at Göttingen," wrote Joad, " a clown suddenly burst into the Congress hall closely pursued by a negro. The negro caught him, leapt upon him, and bore him to the floor, where a fight ensued, which was ended by a pistol shot, after which the clown got up and rushed out of the room, still closely pursued by the negro. The whole scene, which had been carefully rehearsed and photographed in advance, took less than twenty seconds. The President then informed the Congress that judicial proceedings might have to be taken, and asked each member to write a report, stating exactly what had occurred.

" Forty reports were sent in. Of these, one only contained less than twenty per cent. of mistakes in regard to the principal facts: fourteen contained from twenty per cent. to forty per cent. mistakes; thirteen contained more than fifty per cent. mistakes. In twenty-four, ten per cent. of the details recorded were pure inventions. In short, ten of the accounts were quite false, ranking as myths or legends, twenty-four were half legendary, and six only were even approximately exact."

For many years Joseph Pulitzer, the American newspaper magnate, believed that he had seen President Lincoln. "Finally," relates his biographer, "he, so to speak, took himself on one side and firmly figured out that by no chance could he ever have set eyes on the martyred President."

Sir Walter Scott said that he was aware that he could never tell a story a second time without "giving it a new hat and stick." Thomas Henry Huxley commented: "Most of us differ from Sir Walter only in not knowing about this tendency of the mythopœic faculty to break out unnoticed."

Allow me to state briefly what, in the light of the foregoing observations, are points that should be sedulously heeded in memory cultivation. For the purpose of the present illustration, I shall confine my remarks to physical vision and certain of its results.

Physical vision consists of impressions made on the mind through the sense organs of sight. After the physical vision has departed, there remain results of its occurrence, and these become adulterated by results of other physical visions, mental impressions tending to "run together." What is called "*re*trospection" is really *in*trospection; we happen to be conscious of present impressions *regarding*, but not exactly corresponding to, past experiences.

Disintegration of mental impressions is an ordinary and inevitable process. *Aggregation,* or collecting together, of impressions, partly adulterated, is inevitable, too. Its results may be unbridled and fantastic, or may have value in respect of art or science. Aggregation is the basis of all " creative " work. The words " remembrance " and " recall " refer to the results of mental procedure whereby what was formerly connected is put together with approximation to exactitude. The real process is one of *Integration* or (and more properly) *Re-integration.*

In accordance with custom, I propose to employ the ordinary terms, but they should be interpreted in the light of the explanations I have advanced.

" Durability " and " Fidelity," in relation to memory-efficiency, are terms of comparison, not of absolute reality. But—

" To be perfect we *all* should desire;
Though perfection not *one* may acquire."

At first sight, the instability of mind-impressions may seem entirely disadvantageous; but further examination proves to the contrary, as will be shown later in this work. The *recognition* of the instability is a source of strength inasmuch as to be forewarned is to be forearmed. Moreover, it is essential to elucidation of the underlying principles of memory cultivation.

We are able to realise how passing sensory impressions tend to divert attention from reflection and to deaden the force of ideas that in dream-life would be vivid. What, therefore, should one do in order to revive memories? One way consists in conjuring up some sort of picture—which, of course, is partly correct and partly invented—and surrendering oneself to the contemplation. As one becomes more and more oblivious to one's surroundings, mental pictures become, or can become, more and more vivid, more and more impressions being drawn, by the mere act of contemplation, from "the store."

That course is not *certain* to bring about correcter recollection, however. All minds have a mythopœic tendency at times and under certain conditions, but some minds far more than others. Some knowingly surrender themselves to that inclination, and, in accordance with their capabilities, produce works of imagination.

However, when the mythopœic tendency of the mind is recognised, the fact that liars are not necessarily the most untruthful persons becomes palpable. Between eighteen and nineteen centuries have elapsed since Quintilian wrote: "It is fitting that a liar should be a man of good memory." A liar needs to be consistent and foreseeing; but whoever sophisticates, or declines to look facts in the face, creates a habit which entraps himself or herself, increasing the mythopœic tendency and decreasing the efficiency of memory.

CHAPTER III

" UNCONSCIOUS " BRAIN-WORK

" Sometimes forgotten things long cast behind,
Rush forward on the brain, and come to mind."—DRYDEN.

THE musician is accustomed to think in sounds, and the artist in colours. It is similar with children, deaf-mutes, and " the higher animals." Before it can speak, or have any recognition of the meanings of words, the human babe has distinct memories, for, palpably, its conduct is often actuated by them.

Nevertheless, of all newly-born mammals, the human babe is undoubtedly the most immature. It starts at a sudden noise; its gaze is attracted by bright lights; if hungry or otherwise uncomfortable it cries; it sucks the nipple or, perchance, a finger; but all those actions are performed without conscious intent. The avenues of knowledge are but in readiness to accumulate, very gradually, the impressions essential to reflection. Six months or so usually need to elapse before definite signs of intelligence occur; the babe may then reach for objects, and so on. Within a few more months, intentional follows unintentional imitation; and this propensity is markedly evidenced in attempts at walking and talking.

Throughout life, touch and sight are two main means by which a knowledge of concrete objects is obtained. We see an object, and then may desire to hold it in our hands in order to test its texture and weight. That involves the sense of resistance—the "muscular sense." Professor J. A. Sully wrote: "After many conjunctions of impressions the child begins to find out the nature of objects, and the visible aspects which are their most important marks. That is to say, he begins to discriminate objects one from another by sight alone, and to recognise them as they reappear to the eye. Sight now grows self-sufficient. What may be roughly marked off as the *touching* age gives place to the *seeing* age. Henceforth the growth of perceptions is mainly an improvement of visual capacity. At first this power of discerning forms with the eye is limited to objects of great practical or æsthetic interest, as the child's bottle, the rattle. The observer notes one or two prominent and striking features of a thing but overlooks others. Thus in looking at real animals, or at his toy or picture imitations, he will distinguish a quadruped from a bird, but not one quadruped from another and similar, as the goat from the sheep."

I cannot entirely endorse Sully's explanation. In the young babe, lack of discrimination and memory partly accounts for the confusion; but the child's extremely limited vocabulary is an important factor that may not be duly heeded.

In the ordinary course of events (though not by the measures sometimes used with deaf-mutes), speaking is impracticable apart from the hearing apparatus by which vibrations of sound are transmitted to the nerve centres, the nerve centres whereby sound vibrations are translated into ideas, and the nerve centres whereby ideas are converted into the motor impulses which throw into action the organs of speech. Before the intelligent use of words is practicable, the powers constituting understanding have necessarily reached a high level.

Without a background, the condition known as "consciousness" is inconceivable. Consciousness, although a condition, is in a measure comparable to a cinematograph screen upon which pictures might be thrown by two projectors, one at the front and one at the back; for ideas of which we are conscious may primarily occur as a consequence of a sensation (for example, of sight) or from the mental background. Nevertheless, the analogy is by no means perfect; the impressions made through sight, for example, pass through processes in the background and there are "worked up." We normally receive two sight-impressions, one through each eye; and are conscious of but the product of the two.

In passing I should refer to the fact that the cinematograph and normal vision afford apt illustrations of the truth that *duration* concerns consciousness. Each conscious thought takes up an appreciable time, and any nervous process of lesser duration is unconscious to the individual.

Any theory of memory is inadequate that does not take into due account *a mental selective and inventive* power that works without being simultaneously conscious to the individual in whom, or in whose organism, it functions. This background is sometimes given a psychological and sometimes a physiological name. On condition that the terms employed do not create confusion, it does not much matter what terms are used. From the point of view of convenience, sometimes psychological, and at other times physiological, terms best serve one's purpose.

The notion that "mind" unconscious to the individual is credulous, and that "mind" conscious is its sole director is unwarranted. Every idea of which we are conscious has its neural (nerve) as well as its psychical aspect. We may be conscious of some of the steps that lead to a decision, but the steps are evolved by intelligence of which, as individuals, we are unconscious. Consciousness is not *equivalent to* intelligence; but we are *conscious of* results of intelligence. Whatever intelligence occurs belongs to the mind as a whole. Nevertheless, when mental operations reach a certain intensity, they make a longer impression, too, and that impression may give rise to consciousness.

I assume that, apart from consciousness, existence cannot have a pleasurable side or the reverse. Feelings and emotions are states of which we can be conscious; and it is the emotional side by which facial expression becomes apparent to onlookers. Nevertheless, feelings, perceptions and thoughts are due always to latent mental modifications. Thoughts experienced remain, in effect, latent in the form of modifications of the nervous system that have particular inclinations or "dispositions"; and they may be revived by other thoughts or neural activities.

Philosophers having observed that one thought *led to* another, and that these thoughts stood in definite relation to each other, attempted to discover and classify the kinds of correlation under which the revival of mental impressions occurred. When they had performed their task, the fact was observed that two thousand years earlier the same discoveries had been made—indeed, Aristotle went still further. Whereas modern philosophers extended the list of associations of ideas according to Resemblance, Analogy, Contrariety, Vicinity in Place and Time, Relation of Cause and Effect, Relation of Means and Ends, Relation of Premises and Conclusions, and so on, Aristotle reduced the laws of association to four, or rather to three, namely Contiguity in Time and Space, Resemblance, and Contrariety. He *implied* that they could be reduced to one law of Co-existence, and Augustin of Hippo (354—430 A.D.) stated so explicitly. Sir William Hamilton, who called it the Law of Redintegration or Totality, thus expressed it: "Thoughts which have once co-existed in the mind are afterwards associated." (He meant "*consciously* co-existed," but he might have gone further—as will be seen.) Sir William stated that the laws enumerated might easily be reduced to two, the Law of Simultaneity, and the Law of the Resemblance or Affinity, of Thought. Under Simultaneity he included Immediate Consecution in Time; and under Affinity he included everything else.

Affinity of thoughts lies in resembling, or analogous, or partially identical, objects. The imagination of Alexander reminds us of Cæsar and others. The vision of a portrait reminds us of the actual person portrayed. One anecdote suggests another.

Thoughts which stand in contrariety or contrast mutually suggest. Life suggests death. Vice suggests virtue. The king suggests the beggar. Antitheses and wit work on this principle.

Persons suggest places, and places suggest persons.

The axiom that the knowledge of contraries is one, implies that thinking of either involves thinking of the other.

Thoughts of a whole and its parts, of a thing and its properties, and of a sign and what it signifies, are manifest forms of affinity. But simultaneity is also concerned in these instances.

Thought of causes and of effects, reciprocally and of necessity, suggest each other.

But, looked at closely, association works in accordance with a single principle. If ideas were to occur singly and in line, one idea ceasing and another commencing, the association of them—the one suggesting the other—is, to say the least, hardly conceivable. In reality there is overlapping, the "second" idea becoming conscious in a measure during the continuance of the "first." The "second" idea becomes more pronounced as the "first" fades. In physiological language: *neural simultaneity is the active principle of association.*

Moreover, *all* ideas that are the property of a single mind are necessarily associated, either directly or indirectly, for otherwise they would be isolated and meaningless. When direct progression is inhibited, serpentine tracks remain open, though they may not be used.

Of course, minds being differently constituted, owing to heredity and environment combined, the associations that occur differ widely in different individuals, and also in the same individual, according to moods, surroundings, and physical happenings internally.

Thomas Hobbes (1588—1679) related the following anecdote:—

" In a company in which the conversation turned upon the late civil war, what could be conceived more impertinent than for a person to ask abruptly, what was the value of a Roman denarius? On a little reflection, however, I was easily able to trace the train of thought which suggested the question; for the original subject of discourse naturally introduced the history of the king, and of the treachery of those who surrendered his person to his enemies; this again introduced the treachery of Judas Iscariot, and the sum of money which he received for his reward."

We sometimes find that thoughts in succession seem to have no association, and Sir William Hamilton explained, or attempted to explain, the phenomenon in this way: " You are probably aware of the following fact in mechanics. If a number of billiard balls be placed in a straight row and touching each other, and if a ball be made to strike, in the line of the row, the ball at one end of the series, what will happen? The motion of the impinging ball is not divided among the whole row; this which we might *a priori* have expected, does not happen, but the impetus is transmitted through the intermediate balls which remain each in its place, to the ball at the opposite end of the series, and this ball alone is impelled on. Something like this often seems to occur in the train of thought. One idea mediately suggests another into consciousness—the suggestion passing through one or more ideas which do not themselves rise into consciousness. The awakening and awakened ideas here correspond to the ball striking and the ball struck off; while the intermediate ideas of which we are unconscious, but which carry on the suggestion, resemble the intermediate balls which remain moveless, but communicate the impulse.''

Sir William Hamilton's analogy may lessen astonishment at the mental phenomenon, but the action of the billiard balls is really due to elasticity aided by impetus; every ball except the last of the series receives a backward push sufficient to prevent it from moving far. Moreover, Sir William seems to have lost sight, momentarily, of the fact that each idea in the mind is one of an almost continuous series. The true explanation seems to be bound up with the fact previously mentioned, that lack of sufficient duration accounts for the concealment of certain links in the chain.

The association tracks in the mind have been compared to net-work. On the principle of association ''we can explain,'' as Condillac remarked in his *Etudes Elémentaire de Philosophie*, '' how a scholar repeats without hesitation a lesson he has learned, for all the words are associated in his mind according to the order in which he has studied them; how he demonstrates a geometrical theorem the parts of which are connected together in the same manner; these and similar reminiscences of simple successions present no difficulties which the common doctrine cannot resolve. But it is impossible, on this doctrine, to explain the rapid and certain movement of thought which, with a marvellous facility, passes from one order of subjects to another, only to return again to the first; which advances, retrogrades, deviates, and reverts, sometimes marking all the points on its route, again clearing, as if in play, immense intervals; which runs over now in manifest order, now in a seeming irregularity, all the notions relative to an object, often relative to several, between which no connection could be suspected; and this without hesitation, without uncertainty, without error, as the hand of a skilful musician expatiates over the keys of the most complex organ. All this is inexplicable on the meagre and contracted theory on which the phenomena of reproduction have been thought to be explained."

" At every crisis of our existence," as Condillac pointed out, " momentary circumstances are the causes which awaken our activity, and set our recollection at work to supply the necessaries of thought "; moreover, " it is as constituting a want (and by *want* I mean the result either of an act of desire or of volition), that the determining circumstance tends principally to awaken the thoughts with which it is associated." A desire is bound up with circumstances which are associated with the thing needed. For example, a quotation is likely to remind one of its author and his work, and then, probably, of where we think the volume in question is likely to be. " The accessory notions form, as it were," the " train or attendance," and this train becomes stronger in proportion to frequency of requisition. Eventually, these " accessory ideas " become blended and fused with the main idea, they become a habit and are not consciously realised in the ordinary course of events.

"Our thoughts," remarked Condillac, "suggest each other, not one by one successively, as the order to which language is astricted might lead us to infer: the complement of circumstances under which we at every moment exist awakens simultaneously a great number of thoughts; these it calls into the presence of 'the mind,' either to place them at our disposal, if we find it requisite to employ them, or to make them co-operate in our deliberations by giving them, according to their nature and our habits, an influence, more or less active, on our judgments and consequent acts.

"It is also to be observed, that in this great crowd of thoughts always present to the mind, there is only a small number of which we are distinctly conscious: and that in this small number we ought to distinguish those which, being clothed in language, oral or mental, become the objects of a more fixed attention; those which hold a closer relation to circumstances more impressive than others; or which receive a predominant character by the more vigorous attention we bestow on them. As to the others, although not the objects of clear consciousness, they are nevertheless present to the mind, there to perform a very important part as motive principles of determination; and the influence which they exert in this capacity is even the more powerful in proportion as it is less apparent, being more disguised by habit."

We do not usually speak of walking, and similar actions, as "memory," though they really are. It is characteristic of them, when habitual, that they are most easily performed when attention as to method is withdrawn from them. Further: it sometimes happens that we start to walk on a predetermined journey and find ourselves, after a fit of abstraction, at our destination. We continued to walk, found our way, and successfully evaded obstacles. Compare with that unconscious performance of an allotted task the custom of many persons who, when unable to recollect a word (for instance), say: " I'll give my attention to something else, and I shall remember soon " (a prognostication which usually proves to be a true one, the required word becoming suddenly conscious to them as if it had been communicated by someone else), and the apparent explanation is that the required idea is evolved from the train previously set working. Yet, familiarity with the circumstance is the reason that only when less familiar instances of the same phenomenon are brought to light is much surprise excited. Professor R. S. Woodworth tells us of the great physicist Helmholtz, whom he describes as " an extremely fertile inventor of high-grade hypotheses ": " he would load up in the morning with all the knowledge he could assemble on the given question, and go out in the afternoon on a leisurely ramble; when, without any strenuous effort on his part, the various facts would get together in new combinations and suggest explanations that neither he nor anyone else had ever thought of before." Professor J. Arthur Thomson, in his *Introduction to Science*, wrote: " It may be that the imaginative brooding suggests a solution in some way that we do not at present understand—life is essentially creative; it may be that there is a more or less unconscious cerebral experimenting; it is certain that letting the mind play among facts has often led to magnificent conclusions. It seems that the solution is often reached first and the proof supplied afterwards." Helmholtz described how Faraday " with a mysterious instinct made the most pregnant discoveries in natural science, although he was unable subsequently to give any clear account of the train of ideas that led to them." Carpenter asserts that " it is a common experience of inventors (whether Artists, Poets, or Mechanicians), that when they have been brought to a stand by some difficulty, *the tangle will be more likely to unravel itself* (so to speak) *if the attention be completely withdrawn from it*, than by any amount of continued effort."

The supremely important fact to be realised is that the mind-processes that are unconscious to us as individuals (in other words that are latent) are capable of intelligence—without which the sorting out, rejecting, and arranging of ideas could not occur. In the background is the storehouse of our memories, and the factory as well.

"There is a power that works within us without consulting us," said Voltaire; and he meant aright although, psychologically and physiologically, his terminology was at fault. The experience of many besides myself points to the fact that what Voltaire called the " power that works within us " can prove as obedient a servant for literary purposes, for example, as everyone, I presume, will admit it to be in guiding and controlling our footsteps.

When reading the title of this chapter, some persons may have thought that by " unconscious " brain work

I was referring to, or including, hypnotism. That view is totally wrong. The hypnotic condition (*hypnosis*) is not a condition of unconsciousness. Were an individual unconscious, he or she would not understand what the operator meant to impart. After-forgetfulness (*post-hypnotic amnesia*) does not necessarily occur, and is no more indicative of unconsciousness during hypnosis than is the after-forgetfulness sometimes experienced regarding fits of drunkenness a sign that alcoholic intoxication is normally a condition of unconsciousness. Hypnosis is an artificially-induced contemplative mood, preferably of a very profound character.

Of course, unconscious brain-work may *occur during* hypnosis—indeed it inevitably does; and doubtless during normal sleep too; but as to whether sleep is ever an unconscious condition, apparently no way exists of determining, the after-forgetfulness being no evidence either way.

The memory during dreams can, however, be, in some respects, far beyond the normal. But the explanation is that, by taking attention away from external objects, sleep allows of exceptional and widely-extended associations of ideas. I believe Marie de Manacéïne was correct when she wrote, in her book on *Sleep*: " It is thus that most so-called ' prophetic ' dreams may be explained. There are others which require a somewhat different explanation. We may, for instance, dream that such and such a person has made a request to us which seems to be wholly unexpected, but which subsequently is actually made. In such a case it is probable that we already possess the data which would make the request probable, but that we had not in waking consciousness fully realised them or put them together; it was left to the chance associations of dream life."

Similarly, but in a different direction, we see this logical putting of ideas together during sleep. Benjamin Franklin told Cabanis that he had often been helped by dreams in dealing with hitherto baffling political problems. Many of the scientific ideas of Burdach, the physiologist, were worked out during sleep, and by Condorcet the final steps of a difficult problem that had puzzled him during his waking hours. Voltaire and Coleridge composed poetry during sleep, and Tartini composed music. Robert Louis Stevenson dreamed his fictions. Johann M. Schleyer, who, about 1879, formulated, for universal use, a commercial language called "Volapuk," conceived it in a dream. Post, as quoted by de Manacéïne, wrote: "Quick perception, retentive memory, and untiring industry enabled him to master during thirty years of study, the grammatical structure of over fifty languages and dialects. The mass of material brought together by Schleyer became unwieldy and irreducible. In part it was chaotic. The pieces were there, but they were the pieces of a puzzle. The heterogeneous parts were so numerous that selection from them to form a homogeneous whole caused a wearisome work, ending in frequent and ever-changing confusion. One night this patient student retired for sleep. Before him, in orderly array, trooped the necessary characters, forms, and processes out of the bewildering assembly of the fifty languages which had confused his waking thoughts. The vision ended: he rose from his bed, found light and paper and pen, and recorded on a single sheet of notepaper his language, which to-day is substantially what was revealed to Schleyer on that night of vision."

Until 1867, no-one had succeeded in determining the chemical structure of benzene. The clue was suggested to Kekulé in a fantastic dream, and his hexagon formula finally resulted. The discovery gave an enormous impetus to organic chemistry and revolutionised the explosives and dyeing industries. The commercial indebtedness to the dream may be gauged by this fact: royal purple, a pigment used from very ancient times for colouring the robes of state and church dignitaries, was formerly extracted from shell-fish. By that process the cost would be about £80 per ounce; but an ounce made synthetically on the basis of Kekulé's discovery costs now, through extension of production and despite wartime conditions, about two pence.

During the period when I was daily working at my book *Rational Hypnotism*, many times when I awoke in the night I found myself turning over arguments as to presentation of my matter, and would go to sleep again—still arguing apparently.

CHAPTER IV

THE SCOPE OF MEMORY

"Read nature; nature is a friend to truth."—YOUNG.

THERE is a regrettable tendency on the part of many psychologists to make certain observations in the light of what is, or seems to be, everyday experience, and from them to theorise prematurely (the data being insufficient); then, on the basis of their theory, to judge as to the correctness or incorrectness of all other data. The genuinely scientific way holds in abeyance any theorising until all the data that seem to be available have been collected, special care being taken meanwhile to admit, as basic to a hypothesis, nothing untested,—especially so if its acceptance seems contrary to more ordinary experience. If, as sometimes occurs, any ascribed experience does not admit of actual test, we should ask ourselves whether the acceptance as truth of what is to ourselves unknown, is more reasonable than to conclude that misrepresentation, intentional or unintentional, has probably, or certainly, been a factor.

Hypnotism has been a fertile ground for the introduction of memory-marvels. In *Rational Hypnotism* I pointed out, however, that although hypnotic memory is more vivid and extensive than the normal, the remembrance of events of hypnotic—as of normal—life is prone to fade, notwithstanding that some events stand out and are recollected with extraordinary vividness, long after they occurred—the revival of memories being far less hampered by distractions. Occasionally, events of very early life are recalled, even of the first year.

The notion that every incident of which one has been conscious is capable of being recollected under certain conditions, is unverifiable, and contrary to what might be expected from ascertainable facts. Think of the nature of the early life of the born infant, and of the infant's gradual—*very* gradual—accumulation of knowledge, and you cannot fail to realise that remembrances of one's own earliest experiences would be useless. Such memories might be kept alive if they could be reviewed frequently. But time does not permit of that measure. Moreover, we have so changed in ourselves, and in our relationship to life, that recalling would be practically meaningless. We have the end-results of most of the important occurrences—those end-results which can be of special use to us. The contention that remembrance of pre-natal life can be recalled during hypnosis, is absurd. It emanated from a medical practitioner for some time at Colney Hatch Asylum, and according to him the existence of the tested woman was ultimately traced back to the planet Venus!

The assumption that because hypnotised a person necessarily tells, or even tries to tell, the truth is not in accordance with the experience of observant hypnotists.

The assertion is sometimes made that when drowning, remembrance of all of one's life occurs in a few moments. The statement is hardly credible to anyone who grasps what it really implies. Speaking for myself, when I was young I was nearly drowned on one occasion and struggled for three or four minutes. I expected I should be drowned, and came near to being so, but, although I thought of many things concerning my life, curiosity was the most astonishing mental phenomenon. I wondered about the ascribed complete remembrance!

In the year 1581, Padua was astounded by a very renowned Corsican, Giulio Guidi of Caldi. He was of good family and had gone to Padua to study civil law. He was a diligent and distinguished student, and, it seems, was possessed of an extraordinary memory. He was accustomed to visit the house and garden of Marco Antonio Mureti, a celebrated philologer and critic. It thus transpired that Mureti asked Guidi to be allowed to test his memory. Guidi readily agreed, and, having adjourned with a considerable party of distinguished persons into a saloon, Mureti began to dictate words, Latin, Greek, barbarous, significant and non-significant, disjointed and connected, until (on his own showing) he wearied himself, the young man who wrote them down, and everyone else present. Of the whole company, the Corsican alone remained fresh and alert, and continually desired Mureti to supply more words. At last Mureti desisted, declaring that he would be more than satisfied if Guidi could repeat even half of the words taken down. According to the account, Guidi fixed his gaze upon the ground, stood silent for a little while, and then repeated the whole of the words, in the same order in which they had been dictated, and without the slightest hesitation, he then commenced with the last, and repeated them backwards until he came to the first. Then he spoke the first, the third, the fifth, and every other alternate word; and in any other order that was asked. Mureti vouched that there was not the slightest error, and that Guidi, "who was no boaster," declared that he could recite, in the manner mentioned, to the amount of thirty-six thousand words. "What is more wonderful," added Mureti, "they all so adhered to the mind that, after a year's interval, he could repeat them without trouble. I know, from having tried him, he could do so after a considerable time. Nor was this all. Francisco Molino, a patrician of Venice, was resident with me, a young man ardently devoted to literature, who, as he had but a wretched memory, besought the Corsican to instruct him in the art. The hint of his desire was enough, and a daily course of instruction commenced, the success of which was such that the pupil could, in about a week or ten days, easily repeat to the extent of five hundred words or more, in any order that was prescribed." Mureti affirmed "the most extraordinary part of the whole was, that he performed all this by art, having naturally possessed no more memory than ordinary men; of which he furnished undeniable proof by imparting the knowledge to others"; "the Corsican stated that he received the art from a Frenchman, who was his domestic tutor." Ferdinand Gregorovius, a very learned man, in his *Wanderings in Corsica* (wanderings in 1852), wrote: "People called him 'Guidi della gran memoria'" ("Guidi of the great memory"). "But he produced nothing: his memory had killed all his creative faculty. . . . It is with the precious gift of memory, as with all other gifts—they are a curse of the gods when they give too much."

If thirty-six thousand words had been recited to Guidi at the rate of one hundred each minute, the whole would have taken six hours! This book contains somewhere about forty thousand words, and they are connected in *sense*—not like those that were stated to have been recited to Guidi. Personally, I am convinced that, however inaccuracies may have arisen in Mureti's account, they did occur.

To some extent confirmatory of Mureti's account is the fact that in letters (since published) written to Mureti about the date of the occurrence, mentions are made of Molino, and in one instance an allusion is made to Molino's cultivation of the Art of memory under his instructor. Apparently, Mureti did not consider Guidi's achievement worthy of emulation by himself, despite the fact that he was particularly interested in the history and construction of language; and Molino, and whoever else was tutored by Guidi, failed to acquire a facility comparable to their master's. When I deal with memorising "By Rote and by Meaning," I shall attempt to reveal truths that perhaps explain Mureti's attitude, and throw light on the nature of Guidi's device. For the present, I shall content myself with remarking that, before attempting to train the mind to memorise on his lines, the hint given by Gregorovius should be taken to heart—and that will be sufficient.

Nevertheless, I do not wish to infer that an exceptional memory cannot exist alongside originality; on the contrary, without a very good memory the materials for discovery and invention are seriously restricted. Some persons of great executive power have been famed for their memories. Themistocles was said to have been capable of calling by their names each of the twenty thousand citizens of Athens. Cyrus was said to have known the name of every soldier in his army, and the same was stated of Xerxes in reference to his army of one hundred thousand men. Locke drily remarks in this connection: " I think it may be guessed he got not this wonderful ability by learning his lessons by heart when a boy."

Quintilian, who died in A.D. 95, and whose *Institutions of Oratory* is considered one of the most nearly perfect systems ever written, mentions that Themistocles was " generally believed " to have " learned to speak the Persian language accurately in less than a year." He further relates that it was said of Mithridates " that he knew twenty-two languages, the number of the nations over whom he ruled "; and of Crœsus the Rich, that, " when he was prætor of Asia, he was so well acquainted with the five dialects of the Greek tongue, that, in whichsoever of them a complainant sought justice from him, he pronounced in the very dialect a decision on his case. . . . Theodectes, also, is said to have been able to repeat instantly any number of verses after having once heard them." Quintilian adds: " It is said there are some who can do so now; but I never have happened to meet with them; one would, however, believe it, if it were only for this reason, that he who believes that such things have been, may hope that they may be again."

The great philosopher Seneca, who was a contemporary of Quintilian, complained of the inroads of old age, which, he said, were evidenced by his inability to repeat in the order spoken, two thousand names read to him. He declared that on one occasion, when at his studies, two hundred unconnected verses had been pronounced by the different pupils of his instructor, he himself repeated them in the reversed order, beginning with the last and ending with the first.

Seneca mentioned a man who, after having heard a poet read a new poem, claimed it as his own, and as a proof, repeated the poem from beginning to end, which the author was unable to do. A similar anecdote is related of an Englishman whom the King of Prussia placed behind a screen, and who there heard Voltaire read aloud a rather long poem he had written.

Passing to mediæval and modern times, Ben Jonson, the friend of Shakespeare, affirmed that he could repeat from memory everything he himself had written—which included ten dramas. Erasmus when a boy committed to memory all Terence and Horace. Leibnitz and Euler could each repeat the whole of the Æneid. Thomas Fuller, the church historian who lived in the seventeenth century, was said to have walked along Fleet Street, read every sign, and repeated the whole forwards and backwards—but that was not Fleet Street as it is to-day. Niebuhr, a historian of Rome, in his youth was employed in one of the Danish public offices. Part of a book of accounts having been destroyed, Niebuhr (it is related) restored the particulars from memory. Macaulay could remember pages at once, and Sir James Mackintosh had a similar ability. Later, I shall have occasion to give some details of Cardinal

Mezzofanti, whose linguistic ability was undoubtedly extraordinary.

Grotius and Pascal were said to have forgotten nothing they had ever read or reflected upon; but that statement must be a gross exaggeration. Moreover, J. A. St. John, in editing Locke's Works, states that he himself detected " the omission of the thoughts and illustrations, which had no doubt been once within the circle of his " (Pascal's) " acquisitions, but happened to be out of the way at the moment of writing. Besides," adds St. John, " he was sometimes indebted to the memory of his friend Nicole, upon whose suggestions several of the letters " (*Lettres Provinciales*) " were composed."

Dr. Abercrombie wrote regarding Dr. John Leyden, whose memory was remarkable: " I am informed, through a gentleman who was intimately acquainted with him, that he could repeat correctly a long act of parliament, or any similar document, after having once read it. When he was, on one occasion, congratulated by a friend on his remarkable power in this respect, he replied, that instead of an advantage it was often a source of great inconvenience. This he explained by saying, that when he wished to recollect a particular point in anything which he had read, he could do so only by repeating to himself the whole from the commencement till he reached the point which he wished to recall."

A significant commentary on Abercrombie's account is afforded by an anecdote related by Sir John Malcolm. When Dr. Leyden's life was despaired of, his friends endeavoured in vain to persuade him to relax his studies for a time. When unable to sit upright, he propped himself up with pillows, and continued his translations. One day the surgeon, a Mr. Anderson, entered, and, addressing Sir John, who had preceded him, said: " I am glad you are here; you will be able to persuade Leyden to attend to my advice. I have told him before, and I now repeat, that he will die if he does not leave off his studies." " Very well, Doctor," exclaimed Leyden, " you have done your duty, but you must now hear me; *I cannot be idle;* and whether I die or live, the wheel must go round to the last." Despite the depression of fever and a liver complaint, he continued to work for more than ten hours a day. The nature of his memory, and his persistence with his voluntary task, were, in a sense, obsessive.

One of the most learned of men, Joseph Scaliger, who died in 1609, said of himself: " I have not a good memory, but a good reminiscence; proper names do not easily recur to me, but when I think about them I find them out." Nevertheless, he was able to commit to memory all Homer in twenty-one days, and the whole of the Greek poets in three months; and there is recorded a circumstance which, in the light of the points to which I am coming in this book, is significant. Joseph Scaliger, when a Protestant student in Paris, was so engrossed in the study of Homer, that the massacre of St. Bartholomew passed without his cognisance. Until the following day he was unaware of his own escape.

One way by which we may decide in a measure as to how to cultivate memory is by ascertaining how persons remarkable for their memory have behaved in this direction. Such an instance is that of Monsieur Henri Stephan de Blowitz, a great Foreign Correspondent of *The Times* during the reign of Queen Victoria. In *My Memoirs,* by de Blowitz, occur certain passages upon which I ask you to reflect carefully. I shall place in italics particularly pertinent remarks, and shall comment on the significance of them and the whole later.

In dealing with his childhood, de Blowitz wrote:—

" *My memory, which all my lifetime has been my powerful and precious auxiliary, was formed almost entirely alone. It was innate and natural; it required no training.*

" In my father's room there used to be an enormous stick with a gold knob, which I always admired and envied. Every time I saw it I used to ask for it, and every time I asked for it I used to long to have and keep it.

" One day my father said to me:—

" ' Listen; I will give you this stick if to-morrow you recite to me by heart the legend of " Kosros the Wise." '

" That was a way of getting rid of me, for the Hungarian legend of ' Kosros the Wise ' is quite as long as Shakespeare's *Hamlet,* and Sir Henry Irving will tell you that twenty-four hours constitute a very short time in which to learn *Hamlet.*

" Nevertheless, the following day I went to my father's room, and without a mistake I recited to him all the wonderful legend.

" The stick with the gold knob became my property. I did not keep it; but, thank Heaven, I kept my memory."

In April, 1872, de Blowitz was present with Mr. John Delane, the then editor of *The Times,* during an important speech of M. Thiers at Versailles. Delane remarked that it would be a glorious thing if *The Times* could outstrip the Paris journalists in reporting their own news. "When he had left," wrote de Blowitz, "a wild idea came into my head. *Following an old idea which I still retain, I sat down and closed my eyes. I then strove to call up the image of the Assembly, with M. Thiers in the rostrum, and as I had listened very attentively to what he had said, it seemed as if I could hear him speaking and that I could write down his speech.*

"I went at once to the telegraph-office in the Rue de Grenelle. I obtained writing materials in an empty room. There I put into operation my mnemonic process. *Alternately, I shut my eyes to see and hear M. Thiers, and then opened them to write out the speech for the wire.* I was able to recall and report all his speech, which was, of course, instantaneously transmitted to London. When Mr. Delane, next morning, opened *The Times* in England, he found in it two columns and a half reporting the speech he had heard on the previous afternoon at Versailles."

The Treaty of Berlin was published in *The Times* at the very hour that it was being signed in that city. This achievement, described as "the greatest journalistic feat on record," was accomplished by de Blowitz. Through a shrewd expedient he had obtained all of the Treaty except the preamble. As a special favour the Comte de St. Vallier read the preamble to him once, slowly and distinctly. "I thanked him *and took leave,"* states de Blowitz, "and reached the station a few minutes before the train started."

Some of de Blowitz's colleagues having assembled to bid him farewell, he asssumed, at the risk of giving offence, a particularly gloomy and stern demeanour, merely saluting them politely. *"I was afraid"* (he wrote) *"of forgetting the preamble if my attention were diverted by conversation."* Directly the train had passed the outskirts of Berlin, de Blowitz said to his secretary: "Take pen and ink; I am going to dictate something," and then dictated the preamble.

Now for my comments. De Blowitz's statement that his memory "was innate and natural," "required no training," and "was formed almost entirely alone," simply implies that he was possessed of pronounced capacity in regard to memory, and that *it was used aright.* He actually tells us that he had unintentionally memorised Thier's speech by looking at the speaker and his movements, and listening very attentively to what he said. Also, de Blowitz revived the memory by closing his eyes, thereby shutting out impressions of sight, whilst he allowed his memory-vision to come into action, so that he could, in effect, re-listen to Thier.

It should be observed that very little time had elapsed between the delivery of the speech and the sending of the report,—a memory of convenience apparently, as happened in reference to the Treaty of Berlin. De Blowitz was afraid of forgetting the preamble if his attention were diverted by conversation. That, and what preceded it, says, in effect, that de Blowitz retained a calm, contemplative mood. Further, he had confidence in what he called "my mnemonic process."

CHAPTER V

EASE *VERSUS* EFFORT

" What he " (Shakespeare) " thought he uttered with that easiness that we have scarce received from him a blot " (obliteration) " in his papers."—From 1st Folio edition of Shakespeare's Works.

" What he " (Shakespeare) " penned he never blotted out."—BEN JOHNSON.

" Striving and struggling is the worst way you can set about doing anything. . . . The more effort you make, the less effect you produce. . . . Ease and strength, effort and weakness, go together."—GEORGE BERNARD SHAW.

IN the Middle Ages, a laurel-leaf, if placed on the centre of the skull, was supposed to fortify the memory; similarly, to the agate was ascribed the power of making a man eloquent. Were the practices that were connected with those notions useless as well as superstitious? No, they were like " charms," and were probably as effective in many instances as was the ring that was given to Haydn by his emperor, and which the composer believed prompted his genius, if worn whilst he was composing. Of course, the ring did not bestow genius upon Haydn, but the wearing of it gave him the self-confidence essential to doing his best work. Belief in phrenologists' " readings " has made some believe that they possessed good memories, others that they didn't.

Rather similar is the effect of establishing associations the severance of which may interfere with the performance of one's work. Sir Walter Scott was vexed, when at school, that another boy stood at the head of the class. Scott stood second. It happened that the top boy, when asked a question, fingered a waistcoat button and then answered. Scott cut off that button. The next time the top boy was asked a question in class, he felt for the button, and, as it was gone, was placed at a disadvantage sufficiently long for the teacher to pass to Scott. He answered the question and thus procured the coveted position.

Scott's artifice is reminiscent of the story of a barrister who had acquired the habit of winding and unwinding a piece of string on his fingers when he was addressing a court. He was thrown into confusion when the opposing counsel stole "the thread of his discourse."

The worst type of hindering idea is the conviction so often responsible for the perpetuation of a bad habit. That idea is: "I don't want to do this, but I can't help it." If you want to restrain yourself from laughing, but think you cannot succeed, you laugh the more; if you try to swallow a pill, but believe yourself unable, you actually make movements which retain the pill in the mouth—and yet you may, unintentionally, have swallowed a plumstone. Instances occur before one's eyes continually in which the obstacle is the notion of inability; and, it is observable, that notion does more than defeat, it tends to lead one to do the opposite of what is attempted.

Now, if the belief be held that the performance of a task is difficult, that belief is prone to suggest that it may be impracticable; and only a short step from that conviction is the belief that failure is imminent. In any case, the mere fact of considering a task difficult is prone, with most people, to lead to strain which, if it does not entirely defeat, nevertheless distracts attention and lessens the efficiency of one's endeavours. It leads to contraction, cramping, and immobility of one's mental powers—synchronous with physical contraction where there should be relaxation.

One of the most profound and comprehensive thinkers was Herbert Spencer. On one occasion, "George Elliot," then Miss Evans, having remarked to him that, considering how much thinking he had done, she was surprised to see his forehead so unlined, he replied: "I suppose it is because I am never puzzled." Upon this, Miss Evans retorted: "Oh! that's the most arrogant thing I have ever heard uttered." Spencer denied the truth of her allegation, and proceeded to explain that the reason he was never puzzled was that he never "put his mind at the mercy of the subject." Instead of sitting down to puzzle out the solution of a question, he was satisfied to return to it from time to time until, "little by little, in unobtrusive ways, without conscious intention or appreciable effort, there would grow up a coherent and organised theory."

Ready functioning of the intellectual capacities is essential to getting the best results, and some thinkers have resorted to quaint devices for the purpose. The celebrated historian, W. E. H. Lecky, was accustomed to think out some of his problems whilst assuming a kneeling position on his sofa. One great physician, Sir Lauder Brunton, similarly stimulated his thought by bending down his head until it touched his table. In both instances the result was that the brain was sluiced with blood. Somewhat similarly, the German dramatist

Schiller would keep his feet immersed in cold water in order to do away with the effort to keep awake during protracted study. Even in the example of the famous journalist who sprinted round his office table now and then in order to allow of easy functioning of the brain, we see the principle really holds good. And, if I may refer to myself in this connection, I have found floating, or swimming on the back, in sea or river, distinctly helpful in various mental respects. For instance: realising that by consciously attending to one's actions fatigue is invited, I resolved to give my attention to mental problems whilst I automatically performed the requisite physical movements. I rightly reflected that should I err in the latter direction, the waves would quickly inform me of the fact.

The effectiveness of ease as contrasted with the ineffectiveness of effort, is of supreme importance to memory-efficiency. *Trying hard distracts. Memory cannot be coerced.*

In an essay, *On a Man's writing Memoirs of Himself*, by John Foster, and published in 1846, occurs a passage which bears on this phase of my subject, and which is as follows: "In some occasional states of mind we can look back much more clearly, and much further, than at other times. I would advise to seize those short intervals of illumination which sometimes occur without our knowing the cause, and in which the genuine aspect of some remote event, or long-forgotten image, is recovered with extreme distinctness in spontaneous glimpses of thought, such as no effort could have commanded; as the sombre features and minute objects of a distant ridge of hills become strikingly visible in the strong gleams of light which transiently fall on them. An instance of this kind occurred to me but a few hours since, whilst reading what had no perceptible connection with a circumstance of my early youth, which probably I have not recollected for many years, and which was of no unusual interest at the time it happened. That circumstance came suddenly to my mind with a clearness of representation which I was not able to retain to the end of an hour, and which I could not at this instant renew by the strongest effort. I seemed almost to *see* the walls and windows of a particular room, with four or five persons in it, who were so perfectly restored to my imagination, that I could recognise not only the features, but even the momentary expressions, of their countenances, and the tones of their voices.

"According to different states of mind too, retrospect appears longer or shorter. It may happen that some memorable circumstance of very early life shall be so powerfully recalled, as to contract the wide intervening space, by banishing from the view, a little while, all the series of intermediate remembrances; but when this one object of memory retires again to its remoteness and indifference, and all the others resume their proper places and distances, the retrospect appears long."

Does not the phenomenon referred to by John Foster seem to show, or at least to suggest, that in a dream or reverie the original observation at some time, or, it may be, a series of memories, is revived apart from adulterations that have accrued in more ordinary life? However that may be, sedulous cultivation of the contemplative mood should be carried out. By that cultivation one is not only in touch, consciously, with a large number of ideas that usually are out of range, but " unconscious " brainwork becomes more familiar and efficient. Thereby we are dealing with ideas less adulterated, and our conclusions are therefore (1) drawn from better premises, and (2) are not interfered with so much by ideas, themselves in part adulterations, that tend to divert the brain from taking direct track. We don't " beat about the bush " so much.

How can this contemplative mood be developed? The most effective method is comprised under the term " hypnotism "; but the measures comprehended correspond to the practices used by every person whose genius has been brought to light. In a nutshell: on the basis of passivity a method of thought is built up whereby energy is economised and results are enhanced.

It has been tacitly assumed by many, and explicitly stated by some, that not only may ideas tend to actualise themselves, but also that ideas " at the forefront of consciousness " are equally effective whatever the mental condition during which they occur. The matter is far otherwise. During sleep we are apt to believe, temporarily, what, if perpetuated, would be madness. The ideas of sleep are not usually actualised—they remain as ideas. What is true about thought-actualisation is that where the mind-activities as a whole are focused in a certain direction, there is a likelihood of actualisation of what is imagined. In such a case the dominant idea is the result of the centralisation. Strain does not get the desired result, but diverts attention; and sleep does not affect the *whole* mind.

Hypnotic suggestion, when accepted, leads to such a general co-operation of mental capacities that, if within the bounds of physical possibility, actualisation occurs. When one grasps that fact, one sees why it is that suggestions opposed to the individual, in his or her entirety, are rejected, however cunningly they may be presented by an operator. One also realises why, in some instances, suggestions may be unsuccessful until the path has been cleared for their reception,—perhaps by using hypnotism for the revelation of memories not available under ordinary circumstances.

Methodical assumption is the active principle which comes into play when suggestions are accepted, and is the use of memory in a very efficient way. The results, limited by physical factors, accrue from mental picturing, repeated, it may be, many times before the degree of intensity essential to actualisation and permanency is attained. The more exclusively attention is given to them, the better are the results, for the more complete is the mobilisation they effect.

If this explanation, and what it tacitly implies, seem a trifle—shall I say " fantastic " (?), I would ask you to reflect upon the difference that commonly exists between the correct and the usual. For example: if the action desired were to strike the most powerful blow possible with the fist, would not the fist be made to travel a long distance before the blow occurred—or, perhaps, would have occurred but for evasion by the proposed recipient? The correct way would be to get near to one's opponent, and then to try to put a fist *through* him.

The same rule applies to singing a long run; the end of the run should be assumed as corresponding to the middle of the breath.

Let me give one more example. The ordinary procedure when about to lift a heavy weight is to take a full breath and then to strain. The correct procedure is to arrest breathing, with the chest but little expanded, and to refrain from straining. A professional " strong-man " usually has big muscles, but he has but the vitality of a single individual—rarely much in excess of the ordinary. By mechanical contrivances the average man has been proved capable of lifting about two thousand pounds.

Mental strain is incompatible with physical ease; and that gives a guide regarding the desirable mental state for learning and for recalling. A slight knitting of the brows inevitably occurs when one feels that one is confronted by a difficulty; but it should not be pronounced,—no lines in the brow should be hard-drawn.

Of course *assumption* is necessary in order to get the desired physical condition, but that condition is but half-way to the goal; and the goal is but rarely reached direct. The mental state to be kept in mind throughout is " I can "; it is the necessary accompaniment of " I will " in every achievement.

Facts that should ever be kept in mind are that one may try hard to remember, and fail; one may be conscious of searching, and may succeed; but one can leave consciousness open, as it were, and allow whatever may happen to be apt or useful to arise just when (though unknown, consciously, to be wanted) it is wanted for some special purpose. That is the feature of being " fly."

CHAPTER VI

MEMORY-SYSTEMS

"The memory bestows the arts, but it is not itself to be learned by art."—PHILOSTRATUS.

BY "memory-systems" I mean the assemblages of ingenious, though sometimes redundant, devices intended, ostensibly, to facilitate recollection. Memory-systems are sometimes referred to as "mnemonics," or "mnemotechny," or "memoria technica." The first and second of those terms are derived from a Greek word meaning "to remember." Mnemosyne, one of the Muses, was the Greek goddess of Memory.

From 556 to 469 B.C. lived Simonides of Ceos. In his youth he taught poetry and music, and introduced the distinction, which came into general use, between the long and short vowels in Greek. He also, according to Quintilian, "was the first to teach" a system of mnemonics, of which Pliny says he (Simonides) was also the originator. Cicero mentions how the system seemed to have been suggested. According to him, Simonides was in the company of Scopas and others, at a banquet, when a message was brought that there were waiting at the gate two youths who earnestly desired to see him. Simonides arose and went out, but saw no one whatsoever. Meanwhile, the apartment which Simonides had left fell down, burying in the ruins all present. When the friends of the victims were desirous of interring the bodies, they were unable to distinguish one from another, so heavy had been the crash. Simonides, however, established the identities by pointing out exactly where each person sat. " Admonished by this circumstance " (declared Cicero) " upon that occasion he discovered, according to report, that it was order which chiefly threw a light upon memory; therefore, that those who would improve by exercise this part of the understanding must make choice of certain common-places, and the things which they were desirous to remember must be represented in the mind and ranged in such common-places. In that way, the order of the common-places would preserve the order of things, and the things themselves would be denoted by their representative characters; so that, by these means, we might use the common-places instead of wax, and the symbols instead of letters."

In working-order the scheme consisted in thinking of a familiar house, and associating each room with some main idea. The articles of furniture in the room were intended to bring to remembrance the lesser ideas. The speaker's part before the public was to imagine himself walking through the house and looking around, and—the claim was—he would therefrom remember everything he wished to say, and in the right order.

The system just described was called " topology " (from which is derived the English word " topic "), and from it is supposed to have originated the phrases

" In the first place," " In the second place," and so on, that were formerly customary among preachers and other public speakers.

Similar to topology is the use of a picture arbitrarily drawn (*symbology*), or numbers, or letters.

One ancient method ascribed to Simonides is called " the pigeon-hole method." It consists in imagining a series of squares, like the surface of a chessboard, associating each square with a number, and with them a fact or idea, just as documents may have their respective pigeon-holes in an office desk.

One of the most interesting of memory-systems was that of ancient Peru. This system, known as "Quipu," was based on numbers and was worked by means of coloured, knotted threads hanging from a main strand. These threads and pieces of twisted wool were hung at irregular intervals, and knots were placed on them in order to assist memory.

The Catholic rosary is worked on the same principle.

The Schoolmen of the Middle Ages, whose published writings reveal wisdom intermixed with supreme absurdity, practised a number of complicated memory-systems for learning languages, figures of grammar, and logic.

The celebrated Professor Jowett, of Balliol College, Oxford, said: " Logic is neither an art nor a science; it is a dodge." He meant that logic, as commonly taught, was a sort of machine into which such data were put as to be able to grind out the desired conclusions. By ringing the changes on the arranged significances of the letters A, E, I, and O, reasoning was converted into a sort of mechanical art whereby arguments could be framed or refuted without any knowledge of the truth or otherwise of the data. In connection with this artifice, Latin lines were made up from nonsense words, the consonants of which were ignored for the end in view, *viz.*, to facilitate recollection of the valid moods, or modes, of the syllogism. The verse is as follows:—

" Barbara, Celarent, Darii, Ferio, quoque prima.
Cæsare, Camestres, Festino, Baroco, secun
Tertia Darepti sibi vendicat, atque Felapton.
Adjungens Disamis, Davisi, Brocado, Ferison."

Six centuries have passed since that mnemonic process was invented, but, though unscientific, the verse is still expected to be known by every student of logic.

In 1648 Stanislaus Mink von Wenussheim, or Winkelmann, put forth what he called the most " fertile secrets " in mnemonics. His system consisted in the employment of consonants for figures, in order to express numbers by words—vowels being added if and as required. (Leibnitz adopted an alphabet resembling Winkelmann's in connection with a scheme for a form of writing for all languages). Richard Grey (1694—1771) modified and supplemented Winkelmann's system. In 1806, Gregor von Feinaigle, a monk of Baden, working along similar lines, contrived a system whereby numerical figures were represented by letters containing some accidental connection therewith; but the system was complicated by the introduction of localities and signs. He attracted considerable notice in this country by the explanatory lectures which he delivered to crowded and fashionable audiences; and he published a book on his system. One example was as follows: Henry IV of England was born in 1366. This date, represented by the chosen letters is *mff*, which suggests the word *muff*. The method is less obvious whereby the relation must be established with Henry IV. " Henry IV " said Feinaigle, " is four hens, and we put them into the muff, one in each corner." " No one, certainly, after hearing this," wrote Abercrombie, " is in any danger of forgetting the date of the birth of Henry IV; but whether the remembrance is worth such a process, is a separate question."

One modern system, founded on Feinaigle's, uses the following code as a basis which, of course, has to be committed to memory.

1	2	3	4	5	6	7	8	9	0
d	n	m	r	l	j	k	v	p	s

Verse is more readily recalled than prose, for the combination of rhyme and rhythm helps. There is a rhythm in good prose, but it is erratic—before the mind can become accustomed to one rhythm, a change is made to another. For that reason metrical recital of historical and other facts has been given in verse-form. The rhyme " Thirty days hath September," etc., is that most commonly known; but I suspect, from testing the matter, that the opportunity of being able to resort to the rhyme tends to induce an erroneous notion that one does not otherwise know the length of each month.

Catenation, or concatenation (from the Latin *catena*, a chain), is a sort of free association of ideas. Eustace Miles, in his book *Essays in the Making*, wrote regarding it: " One of the best-known of Memory Systems, the Pelman, includes the art of linking together words which otherwise may be unconnected; for instance, it happens that you wish to remember a list of people or things in a certain order—a list of kings and queens, or of battles, or of laws, etc. There seems to be no link of meaning between one word and the next. How are you to remember the two? How are you to connect them together? If you take a word like 'Pelman,' and wish to link that to the word 'memory,' how are you to do it? Part of the Pelman System is to find links. Perhaps the links might be as follows: 'Pelman' suggests the word 'man,' by similarity of sound; 'man' suggests 'men' as the plural of the same word; and 'men' suggests 'memory' by similarity of sound. Or 'Pelman' might suggest 'pelt' by similarity of sound; 'pelt suggests 'rain;' 'rain' suggests 'remember umbrella' (the connections here are very clear); 'remember' suggests 'memory.'"

Catenation goes a long way round, and as a habit is bad—liable (I know) to develop into a mania, for I have cured (by hypnotism) the condition so caused.

Cicero claimed that by means of topology he memorised his great speeches. He was a man possessed of great visual memory, and for persons of his type the scheme may work well. Nevertheless, it tends to distract attention from the subject of a speech, and therefore cannot be used by any but the few, alongside true eloquence.

Eustace Miles candidly gave this advice: "Do not apply any system if you can do without it. Do not apply any system if it does not suit you as an individual."

Nevertheless, the effect of premature abandonment of a habit that has served a partially useful purpose must be taken into account. For example, the pigeon-hole method may seem to have nothing in its favour; but Francis Galton found that, from early childhood, a considerable number of persons have pictured the numbers one, two, three, and so on, in a sort of geometrical arrangement, in some instances as lying in a circle, in other instances as lying along a line the direction of which changes at certain points.

We all use mnemonic devices sometimes. Alliteration doubtless helps, and, if veiled, particularly so, because of the reflection it induces. An instance is the title given by one of Arnold Bennett's characters to the novel he (the character) is supposed to have written—" A Question of Cubits."

An artifice resembling the custom of some persons to tie a piece of string around a finger, or a knot in a handkerchief, for the purpose of reminding them of some " duty," was used by the Roman who turned the stone of his ring inwards towards the palm of his hand. An analogous expedient consists of connecting the name of a person with some character, or place, or sound.

Making up a suggestive word or an analogy is sometimes useful. Huxley, who was the first person to call himself an " agnostic," remarked of a student who had forgotten which was the " mitral," and which the " bicuspid," valve of the heart. " Poor beggar! I was in that dilemma until I reflected that a bishop could never be in the right, so that the *mitral* valve *must* be in the left!"—He was thinking of a bishop's mitre.

Sir John Adams mentions a friend who was accustomed to forget his telephone number, 2843. He remembered it later (thankfully after a hard day's work) by thinking of a greedy Irishman who was accustomed " to ate for three."—The " to " might be lost; so, perhaps, " too late for tea " is a preferable reminder.

Memory-Systems can help in the memorising of disconnected facts, but they do not, in themselves, improve the general capacity of memory. Moreover, whatever elaborate memory-system is adopted, it necessarily increases the amount to be memorised. " If I want to remember this, I must remember that;" but what about remembering that which it is hoped will act as a reminder?

When a memory-system is adopted, it may happen to be relied upon because of testimonials. In other words the memory-system necessarily acts somewhat like a bread-and-sugar pill, or coloured-water, viewed as a valuable " remedy," but with the disadvantage of unnecessarily complicating the task and diverting attention from the main matter. That is why, in my first chapter, I cited, as very apt, Francis Bacon's comparison of a devotee of a memory-system with a tight-rope walker so anxious to keep his balance as to have no opportunity of simultaneously attending to anything else.

I am tempted to add that whoever seems to employ successfully an elaborate memory-system, does not demonstrate the excellence of the system, but the excellence of his own memory.

CHAPTER VII

PHYSICO-PSYCHIC AIDS

"Nature is a strict accountant; and if you demand of her in one direction more than she is prepared to lay out, she balances the account by making a deduction elsewhere."—
HERBERT SPENCER.

IT is said that Sir Isaac Newton made but one speech in Parliament—a request that someone in the gallery would open the window. This should have proved a useful hint regarding the advisability of fresh air, and other hygienic aids, for the legislators of our nation. I am afraid it didn't.

Impure air leads to sleepiness and, consequently, inability to grasp associations of ideas and to keep the attention focused on any subject of study.

The most nearly perfect condition of the organism, as a whole is inseparable from the harmonious action of its components. One sometimes hears the remark, "It is not my bodily strength, but my *will* that does it"; but every activity, physical and mental alike, is dependent upon vitality. Persons "out of sorts" often complain of loss of memory and of the power of fixing the attention to a matter in hand. Debility of any kind is unfavourable to stable and ready memory.

The quality of the blood, and the presence in it, or absence from it, wholly or in degree, of bio-chemical substances, termed " hormones," profoundly affect mental as well as physical functions.

The brain is the principal—but not the sole—organ of mind. A brain would be useless but for the avenues of intelligence—the sense organs and the nerves by which they are connected with the spinal cord or the brain. Nevertheless, as Sir Thomas Clouston remarked of the brain: " Derangement of any part of it will derange or diminish mental force. Non-development will arrest mind growth. Improper blood will alter mind, imperfect drainage will confuse mind, and mechanical shocks will kill mind."

Francis Bacon realised that memory depends upon " the binding of the thoughts," and also upon physical happenings. But some of his remarks bearing on the latter aspect are quaint. He wrote: " The brains of some creatures (when their heads are roasted), taken in wine, are said to strengthen the memory, as the brains of hares, brains of hens, brains of deer, etc. And it seemeth to be incident to the brains of those creatures that are fearful."

Although it is inadvisable for a healthy person to determine to subsist upon foods for invalids, the fact should not be ignored that digestion of certain other foods demands much energy. As a general rule, whenever long-continued and intense mental application is undertaken, the food should be such as is easy of digestion and nevertheless nourishing. If a full meal be eaten, there should be an interval of not less than half-an-hour before the commencement of mental application. Whatever causes fatigue is temporarily—though perhaps not always—opposed to memory-efficiency.

Complete salivation, through thorough mastication usually, is important. It lessens the quantity of food needed, and ensures digestion.

Morphia, sulphonal, veronal, belladonna, and bromide of potassium, affect recollection unfavourably. Some drugs given to ameliorate mental trouble cause deterioration and disintegration of brain-substance.

Stimulants tend to give a feeling of freshness inasmuch as they temporarily prevent waste matters from leaving the tissues and entering the blood-stream for excretion. Eventually, therefore, they draw upon reserves of energy. Water is better, in the long run, than tea or coffee.

Fatigue causes, or is accompanied by, an acid condition of the muscles: and the acid can come from the fatigue alone, or be in part—and probably in much the larger part—due to wrong feeding (either as to quantity or kind), or to worry, or other unfavourable mental state.

Position is important. When about to sit to study, in order to get the right posture walk backwards until both legs touch the chair, then sit as far back as possible, so that the body is not partially doubled up at the waist.

The activity of the nervous system, as a whole, being prompted and regulated by impressions made upon it, and the lungs and the skin being two of the principal sources through which pleasant and invigorating sensations can be received, judicious bathing, and full respiration (such as forms a part of genuine voice-culture), are powerful means of strengthening the nervous system, and of improving mental as well as physical health. My daily swims, in the open air, all the year round, I find highly advantageous. Fatigue is lessened or abolished, and I often find, just after a swim, the solution of intellectual problems. My scanty, reformed clothing also is helpful.

Professor Mosso, of Turin, demonstrated that (1) work done when one is fatigued uses up progressively more and more energy, and (2) recovery after the task is slower. It follows that, although endurance in mental application should be cautiously cultivated, short spells of rest should be taken. Inasmuch as at first the tendency of work is to improve, then to remain stationary, and then to deteriorate, a pause should be made at the moment deterioration begins. The student should not trespass more than is unavoidable upon the hours that are required, in his or her particular instance, for sleep. The opposite course of action tends to be ultimately defeating.

To relieve the body when fatigued, the following mode of procedure is valuable: Lie on your back; if on a bed, remove the pillows so that the head be not raised, and lower the shoulders, so as to form a slight curve at "the small of the back." Slowly expand the chest throughout, thus allowing of full inflation through the entrance of air—just as would happen with a popgun or bellows. (Sniffing and gasping are each unnecessary and can be injurious. The noise which accompanies them is due to friction of the entering air in contact with the passages, which are partially closed whereas they should be well open. One can compare the noise to that of wind whining through a nearly-closed doorway.) When the full breath has been taken, the lower, but not the upper, part of the abdomen is retracted. Hold the breath for a moment or so, then slowly exhale. Take another breath (in the same way as the first); and, whilst exhaling, imagine the legs lifeless—absolutely limp. Take another breath, and while exhaling that, assume that the arms are lifeless. Act similarly as regards other parts of the body. The re-invigoration that can be brought about by this exercise is due to the combination of relaxation with respiration. If continued, however, beyond a point (ascertainable through experience) sleepiness is induced—indeed the exercise can be used as a remedy for insomnia, and often is everything necessary.

CHAPTER VIII

BY ROTE AND BY MEANING

"Riches are goods to him alone who knows how to use them."—TERENCE.

COLERIDGE, in his *Biographia Literaria,* relates the following case:—"It occurred in a Roman Catholic town in Germany, a year or two before my arrival at Göttingen, and had not then ceased to be a frequent subject of conversation. A young woman of four or five and twenty, who could neither read nor write, was seized with a nervous fever; during which, according to the asseverations of all the priests and monks of the neighbourhood, she became possessed, and, as it appeared, by a very learned devil. She continued incessantly talking Latin, Greek, and Hebrew, in very pompous tones, and with most distinct enunciation. This possession was rendered more probable by the known fact that she was or had been a heretic. Voltaire humorously advises the devil to decline all acquaintance with medical men; and it would have been more to his reputation, if he had taken this advice in the present instance. The case had attracted the particular attention of a young physician, and by his statement many eminent physiologists and psychologists visited the town, and cross-examined the case on the spot. Sheets full of her ravings were taken down from her own mouth, and were found to consist of sentences, coherent and intelligible each for itself, but with little or no connection with each other. Of the Hebrew, a small portion only could be traced to the Bible, the remainder seemed to be in the Rabbinical dialect. All trick or conspiracy was out of the question. Not only had the young woman ever been a harmless, simple creature; but she was evidently labouring under a nervous fever. In the town, in which she had been resident for many years as a servant in different families, no solution presented itself. The young physician, however, determined to trace her past life step by step; for the patient herself was incapable of returning a rational answer. He at length succeeded in discovering the place where her parents had lived: travelled thither, found them dead, but an uncle surviving; and from him learned that the patient had been charitably taken by an old Protestant pastor at nine years old, and had remained with him some years, even till the old man's death. Of this pastor the uncle knew nothing, but that he was a very good man. With great difficulty, and after much search, our young medical philosopher discovered a niece of the pastor's who had lived with him as his housekeeper, and had inherited his effects. She remembered the girl; related that her venerable uncle had been too indulgent, and could not bear to hear the girl scolded; that she was willing to have kept her, but that, after her patron's death, the girl herself refused to stay. Anxious inquiries were then, of course, made concerning the pastor's habits; and the solution of the phenomenon was soon obtained. For it appeared that it had been the old man's custom, for years, to walk up and down a passage of his house into which the kitchen-door opened, and to read to himself, with a loud voice, out of his favourite books. A considerable number of these were still in his niece's possession. She added, that he was a very learned man, and a great Hebraist. Among the books were found a collection of Rabbinical writings, together with several of the Greek and Latin fathers; and the physician succeeded in identifying so many passages with those taken down at the young woman's bedside, that no doubt could remain in any rational mind concerning the true origin of the impressions made on her nervous system."

The foregoing narrative, though dealing with occurrences of an illness, have a bearing on the specific character of a memory such as Guidi's. His memory was part of a deformed mind; there should be harmony and balance between the various mental functions, as of the physical also.

May I remind you that at first an infant can make no voluntary attempt to remember, that its ideas and their associations are purely automatic? The capability of discrimination—of the recognition of differences and similarities—is for a considerable time elementary. The young child, having had but little experience, is necessarily very credulous. Gradually, with increasing age, credulity lessens in extent, and if the child's brain be sound, he or she early questions some, or much, of whatever is dogmatically presented for acceptance and belief.

The intelligent child remembers well, but also has capacities of mental digestion, assimilation and utilisation. It loves to put to use what it learns. It learns more and more, thereby stocking its memory with an abundance of useful facts. On the other hand, trivialities in general excite no particular interest, and are quickly "forgotten," so leave room, figuratively, for things of more importance. Principles of procedure form a particular part of the mental stock of a truly educated person. Consequently, if, for example, data are required, directions in which to search for them are likely to be known already. Thus the mind increases in efficiency steadily. The brain is at its best when the owner is at his or her prime, and a sound brain ages but slowly, especially if a reasonable degree of health and physical vigour be retained. The case is the opposite in a person who has almost exclusively attended to trivialities and routine; he or she becomes less and less capable of reasoning justly and comprehensively.

Memories solely remarkable for absorbing "by rote" are apt to excite astonishment, but that is because they are not estimated at their true value, or, rather, lack of value. What they absorb is not "worked upon" internally, and remains more nearly intact. The whole contents of the mind are hardly comparable with those of the profound thinker, for he has many side-issues—worked up, it is true, into a net-work of associations. He has ample means of accumulating knowledge, for this discrimination is exercised in more and more *directions,* and more and more *minute differences* are observed.

The greater the extent of the rational, discriminative memory, the more valuable is the nature of the work that is done by unconscious brain-work; which, in turn, supplies material for discrimination of which one is conscious. Nevertheless, periods of "rest" are needed. Dr. Oliver Wendell Holmes wrote: "I question whether persons who think most—that is, have most conscious thought pass through their minds—necessarily do most mental work. The tree you are sticking in 'will be growing when you are sleeping.' So with every new idea that is planted in a thinker's mind: it will be growing when he is least conscious of it. An idea in the brain is not a legend carved on a marble slab: it is an impression made on a living tissue, which is the seat of active nutritive processes. Shall the initials I carved in bark increase from year to year with the tree? And shall not my recorded thought develop into new forms and relations with my growing brain?"

An able man necessarily has a good memory, but his intellect has grown accustomed to discriminating rationally, in preference to absorbing. Such discrimination leads to the recall of many ideas, suggested by what might have been unquestioningly absorbed; many of the consequent reflections, and, it may be, conclusions arrived at, are remembered; but to memories of mere convenience suitable for the thousand-and-one trivial incidents of everyday life, he does not hold tenaciously. This general attitude interferes with memory-by-rote. It is thus that, on superficial observation, the real immensity of his memory is disguised, as is also the fact that efficiency of memory has become a habit to him.

Erasmus compared a good memory to a net so made as to confine all the great fish, but to let the little ones escape.

Excessive memorising by rote tends to interfere with the intellect as a whole, for it makes persons credulous, and detracts from the capacity of invention, as was said in reference to Guidi.

What, then, of able actors and executive musicians? *They* display marked originality—which is comparatively rarely the case with mimics.

If understanding and memory be each remarkable, an "unworked-up" production does not last long. Pray think of de Blowitz's precaution against forgetting the wording of the prologue of the Treaty of Berlin.

The ideal mind is that which habitually discriminates, but can inhibit that propensity whenever such inhibition is discreet.

A fully efficient mind is *proportionate,* every function being in harmony with every other. There should always be balance between the two activities—memory and discrimination; but each should be pronounced. So many persons might discriminate if they could but remember! The various modes of mental activity tend to supplant each other. How can one ensure due capacity of idea-absorption?

Please to think for a moment of the child, to whom the significances of lights, shadows, perspective, and so on, are but gradual acquirements. The artist, having to paint on a flat canvas, needs to recover his *infantile impressions* of vision, and the success of his attempt to do that is somewhat proportionate to the extent to which he can convey on the canvas the notions of *reality.* Just as with the painter, the person who attempts to recover the art of readily absorbing ideas needs to assume the infantile attitude; he or she must *put aside* excessive discrimination and reflection.

Ease as opposed to Effort is the key to the situation. Whoever *absorbs* well, *allows* the impressions to sink into the mind, and the utilisation of physical and mental passivity is the desirable basis. On that showing, it would appear, at first sight, that persons who do not discriminate well are the best hypnotic subjects. That, however, is an error; for such persons, although they are prone to *accept* ideas, have not the vivid imagination to *actualise* them to the full.

CHAPTER IX

HOW TO PASS EXAMINATIONS

> "We know how to speak many things which are false as if they were true, and we know, when we choose, how to wrap up truth in fable."—HESIOD.

JOHN HUNTER (1728—1793), the great Scottish surgeon and anatomist, at twenty years of age could hardly read or write, though he was an exceptionally expert furniture maker. Later, when he had become famous as a professor (as an author he was hardly a stylist) he said, hyperbolically, to his class: "I never read; *this*," he added, pointing to some specimen, "is the work you must study if you wish to become eminent in your profession." When informed that one of his contemporaries had cynically remarked that he (John Hunter) was ignorant of the dead languages, he commented: "I would undertake to teach him that on a dead body which he never knew in any language, dead or living."

Educational measures in the true sense, are such as *draw out* (that is, reveal and develop) capacities. Much that goes under the name "education" develops *in*capacities—is, indeed, systematic training of credulity and, consequently, tends to stifle originality. W. T. Best, who was reputed to be the finest English organist of his day, said that Doctors of Music usually suffered from an overdose of theory. Professor T. H. Huxley said that in his student days he could easily have been floored by an examiner who asked for " so-and-so's " views, but could have given a pretty good account of his own and why they existed. He said that most students work " to pass, and not to know, and outraged Science takes her revenge. They do pass and they don't know." Similarly, Professor H. Bompas Smith, speaking before the annual conference of Universities of Great Britain and Ireland, in May, 1928, said: " When you think of the hundreds of thousands of boys and girls being taught something which can have no vital bearing on their lives by teachers who are regarded as infallible, is it wonderful that they grow up to be men and women with little power of independent thought? . . . The attitude of students at lectures is appalling. They write down what is told them and accept it as the truth." He declared that the curse of " education " had always been inert ideas. Reverting to Professor Huxley, even *he* made a point of publicly admitting: " I have passed sundry examinations in my time, not without credit, and I confess I am ashamed to think how very little real knowledge underlay the torrent of stuff I was able to pour out on paper." In his *Autobiography* he stated: " The only instruction from which I ever obtained the proper effect of education was that which I received from Mr. Wharton Jones, who was the lecturer on physiology at the Charing Cross School of Medicine."

Those medical and other " students " who gulp down large masses of data given to them as food for their intellects, cannot meanwhile be exercising the discrimination essential to becoming real adepts; any future progress is impeded by fictions that have been accepted as facts, their minds having become incapable of looking at facts as they really are.

If, when I was teaching voice-production, I had been asked how certain important examination-questions on vocal physiology should be answered, I should have inquired as to the institution concerned, and should have answered accordingly; and I should have pointed out that, in some instances, the number of fictions promulgated corresponded (in my judgment) with the number of the institutions.

In general, the more rational an individual happens to be, the more he must restrain (or seem to restrain) his curiosity and reason; for should he evince ability which contradicts his text books, he may be floored for his pains—and honesty.

However, diplomas are hall-marks of (ostensible) proficiency, in many instances have value in the eyes of the law, and commonly they have a business-value. It is imperative on the part of the student ambitious of professional success in certain directions, to seem, for the purpose of examinations, to have accepted this or that set of data—right or wrong. I assume, therefore, that if the question were put to students: " Which do you choose: to work superficially and pass your examinations? or to work thoroughly and fail them? " the majority's answer would be something on the lines of an answer once given on another matter. A reward having been offered for the best epitaph on General Wolfe, two gentlemen agreed each to write one and, as a joke, to submit them to Dr. Samuel Johnson for his opinion as to respective merits. He perused them. " The epitaphs are both extremely bad," said he, "and therefore I prefer *the shorter of the two.*"

I propose, therefore, to endeavour to fit my remarks here to the requirements of the majority, and shall leave to a future chapter my views as to " How to *Master* a Subject."

Learning or memorising is the first process for consideration. You should ascertain whether the measures you use are economical of time and energy; if they are not, you should find in what respects they are faulty—and should amend them. Memorising is not merely a matter of application.

Practice can get progressively better results from the measures one uses, even though those measures may be far from ideal, just as a person who perseveringly plays the piano gets some facility of execution, though not so much with haphazard method as by attention to touch, isolation of finger-action, and so on. (Indeed, that facility is almost entirely a result of a sort of memorising.) Experience usually leads to some economy of energy, also gives some confidence, and probably adds some improvements in the management of the material attempted to be memorised.

The skill acquired in memorising in one direction gives confidence, as a rule, as regards mastery in another, and it also establishes the habit of looking for relationships, grouping, and exceptions. In other respects it does not do much in the matter of transfer of the ability from ground to ground. Memorisation of verse or music, for instance, may be improved without improving memory of faces or names. Much time can be wasted through not observing that fact.

Nevertheless, there are principles which apply, in a general way, to most forms of memorising, and which I shall therefore mention.

One first general principle is that one should bring to bear as many senses as possible. Dr. Samuel Johnson stated: "The act of writing distracts the thoughts, and what is read twice is commonly better remembered than what is transcribed." But I question if that statement always holds good; and I believe that writing down dry facts a few times is far better than repeating them orally. We have the thought of the words and their appearance, as well as the necessary concentration of attention upon them.

Reasoning and conversing fix memories. The general tendency is to get impressions when possible through the strongest sense, but, as we may judge from the consideration of blindness, this strengthens that sense at the expense of others. Nevertheless, if we ignore the strongest sense, memory is thereby made relatively inefficient, for we do not get so strong an impression as we might.

Attention is a powerful aid to memorising. Nothing can take its place. Similarities, differences and comparisons should be observed and reflected upon.

If we are passionately interested in anything, we are likely to memorise about it quicker than are most persons with far superior memories, but not a like interest. One reason is that where there is an interest, one keeps recalling and establishing associations. Sir Walter Scott was famed for his memory; but he said that what he was interested in was what he remembered. When he was a boy, his mother considered him to be a blockhead.

Quick forgetting infers, generally, lack of interest in what we forget. That is one reason why one's work should be where one has interest.

If one has to do work which does not in itself appeal to one, interest should be developed deliberately. An Oxford student had taken Divinity as his special subject in connection with his work for a Bachelorship of Arts. He was of a critical nature and ceased to believe in much of the Bible. His interest waned; he said he was " fed up with the yarns " he was expected to swallow. He shirked Divinity, and, to avoid failure, eventually sought my help. I advised him to take written note of everything he felt disposed to ridicule, to question, or to condemn; and I added that perhaps he might like, later, to publish his experiences and opinions. He seized the hint, his interest was aroused by the scheme, and he resumed his studies with zest—and successfully, in two senses.

A distinguished writer and thinker informed me that when his son had obtained his medical qualifications, he advised him to forget " authorities " and to begin to think for himself. But, I wonder how many medical men who adopted in their practice " unorthodox " measures, had their first incentive in a critical spirit whilst they were but students.

I heard a clergyman who had been a senior wrangler at Cambridge assert that the greatest memory-feat he had ever known was that performed by a Cambridge student who could not understand Euclid's reasoning, so, for examination purposes, committed the whole to memory. For many persons, and in most instances, the first point is to get the *meaning* of what is imparted—be it right or wrong. What is unfamiliar has to be made familiar, what is familiar has to be made more so, and all should be connected together as much as possible.

Meaning has a great deal to do with memorising. This is evidenced by a typical test which consists of attempting to memorise lists of words; one list without direct associations of ideas, the other with them.

About the middle of the eighteenth century, Macklin, a celebrated actor, gave a lecture in which he asserted that he could remember anything that he had read through once. Foote, a rival and wit, thereupon handed to him a sheet of paper on which he had written: " So she went into the garden to cut a cabbage-leaf to make an apple-pie; and at the same time, a great she-bear, coming up the street, pops its head into the shop. What? No soap. So he died; and she very imprudently married the barber; and there were present the Picninnies, and the Joblilies, and the Garcelies, and the great Panjandrum himself, with the little round button on top; and they all fell to playing the game of catch-as-catch can, till the powder ran out of the heels of their boots."

Macklin failed, for there was no association of ideas dependent upon meaning. The intricacies of a maze similarly lack interrelation. The best and quickest plan in each instance is to observe sufficiently to know each part, and to form a relation between it and whatever happens to be before and after. Similarly as with mazes, complicated memory tasks may require to be mastered in sections. Indeed, all knowledge being interrelated, in a sense, we necessarily employ " the part " method, " the whole " always being a part of something else.

How should a book's information be mastered? After studying the introduction or preface, the book may be skimmed, observation being taken of the headings and general contents. Then the book may be scanned throughout.

Of course, I do not recommend that process in the reading, for entertainment, of a novel. If the novel is cleverly schemed and written, the fact that the end is unknown before reached may hold the attention and interest.

By tackling a study in parts of reasonable length, the pleasing sense of achievement may not be too long delayed. But the relation of the parts to the whole should be grasped soon.

The sense of achievement is an incentive to long, in preference to short, periods of study without interval; indeed, the learner who sees he or she is on the road, wants to hasten towards the destination; and the more that is accomplished, the greater is the sense of satisfaction, and stimulation to new endeavours.

At the same time, self-defeat may thus occur through fatigue—with which subject I have already dealt. Provided the mind be not fatigued, exercise strengthens it and gives it more endurance—similarly as with exercise of the muscles. But, and this is important, exercise of a function, physical or mental, needs pauses in order to allow of growth. (No wise athlete would be disposed to " cram " for an athletic contest.) What is crammed tends to be forgotten speedily, whereas intervals increase durability of fixing.

Examinations sometimes allow of little time for preparation. To hasten learning, should repetitions be spaced? or should you continue with a lesson until you have mastered it? The answer is that spaced repetitions are on the whole the more successful. For the purpose of obtaining the greatest economy in a specific study, the intervals should not be shorter than ten minutes, nor longer than two days. Suitable spacing tends to domiciliate ideas and, consequently, adds to durability.

The fact that spaced study is better than unspaced does not show that study should be in spasms. The probability, and indeed the certainty, is the other way. Spacing applies to the same kind of material; and a change in kind may refresh. *The facts should ever be borne in mind that as long as we are conscious we are thinking; and that if we do not strain, fatigue is greatly delayed.*

After " learning," purposely fix attention on something else. By that means confusion is combated. Some advise learning at night, then having a good walk before turning in.

We now come to the question of *Recitation.* By that term is meant, in this connection, the substitution of repeating to oneself, instead of merely reading, only referring to the book when necessary to verify or when " stuck." This process unquestionably is definitely valuable. It makes effects more durable than does reading. Its results are stimulating, something having been clearly achieved. It shows, also, where attention is specially needed.

A query arises as to how soon one should commence recitation. No definite answer can be given, much depending upon the material to be memorised and the attributes of the learner. When the sense, rather than the exact wording, has to be memorised, recitation, in the nature of a review, may be used after the first reading, and the details may be filled in later. But, when the sense has to be memorised, there is often advantage in referring to other books or discussing the matter.

Recitation is less effective just after study than when four hours have elapsed. Intervals allow of connecting-up of relevant ideas.

Repeated reading can be monotonous; but, as I said, recitation is stimulating. It is so inasmuch as it checks off, as being partially done, what will be done later as a whole. This fact tells in favour of using " the part " method of memorising alongside " the whole " method.

We may repeat something sufficiently to recite it correctly, or we can "make assurance doubly sure " by " overlearning "—further repetition. This does not occupy much time and is worth while.

Whatever has been learned thoroughly, and especially whatever is meaningful, is forgotten much more slowly than what is mere nonsense—meaningless.

To *recall* you need self-confidence and a lack of flurry. You should become absorbed in your task; and if emotion be engendered, that will enhance your success. Recall is sometimes prevented by more than one way of proceeding presenting itself. Similarly, failure of the attempt to recollect a name may occur through thinking of another. By *ceasing to try consciously,* the temporarily-forgotten name may be remembered. The same thing applies to a difficult problem. For recall there needs to be a stimulus, but the stimulus is less than was required in the act of learning. To recognise a person or object, only part has to be, or even can be, recalled.

Can *recall* be improved? By trying, then resting, then trying again, and so on, it may be. *Trusting* your power to recall is very important, and is concerned with every devised means of memory training. Rely upon that capability rather than upon means taken *to allow of forgetting*—such as written notes.

Retention may be partial and concealed until re-attempts at memorising are made, when the time occupied in re-learning is less than was necessary in the first learning.

The rate of forgetting is more rapid at first, then slower and slower.

To ensure retention, *review.* A series of reviews makes the memory more and more durable.

Whether the retentive capacity can, or cannot, be improved is a disputed point. Some say that it is fixed by the constitution; others that it depends upon thorough learning, and therefore can be improved. Nevertheless, disease, injuries, and certain drugs undoubtedly interfere with retention; and, as shocks can arrest the fixation of ideas, it is well to allow time for the ideas to become firmly implanted. A valuable precaution is attention to one's health.

To what extent is memory merely latent? To what extent is the seeming inability to remember due to lack of suitable stimulus?

William Hutton, the historian of Birmingham, and (wrote Isaac D'Israeli, in his *Literary Character*) "a man of an original cast of mind, as an experiment in memory, opened a book which he had divided into 365 columns, according to the days of the year: he resolved to try to recollect an anecdote, for every column, as insignificant and remote as he was able, rejecting all under ten years of age; and to his surprise he filled those spaces for small reminiscences, within ten columns; but till this experiment had been made, he never conceived the extent of his faculty."

All introspective students, I believe, experience at times a feeling of knowing but little. What they are conscious of possessing is but a fraction of what is stored away; and a stimulus may bring forth much that seemed forgotten. It should not excite surprise, therefore, that just before examination the student may feel that he has forgotten "nearly everything," yet the examination questions lead to the opening up of the contents of his or her mind. Worrying about recall is worse than useless; one should attend to memorisation; then, if one remain calm and confident, one does not adversely interfere with retention. In my chapter on *Ease versus Effort* I indicated how that end can be reached without circumlocution.

CHAPTER X

MEMORY-ORDER

(FOR TEACHERS AND THEIR PUPILS)

"Right culture strengthens the inward powers."—HORACE.

EDUCATION being impossible apart from the association of ideas, it behoves all teachers to endeavour to secure that whatever associations they are instrumental in establishing in the minds of their pupils make for general efficiency.

The Swiss educational reformer, Johann Heinrich Pestalozzi (1746—1827), wrote: "A child is a being endowed with all the faculties of human nature, but none of them developed; a *bud not yet opened*. When the bud uncloses, every one of the leaves unfolds, not one remains behind. Such must be the process of education." But, alas! it is seldom the process of *instruction*!

What a child learns of itself in early infancy is the basis of the child's education. In endeavouring to foster mental development, the principles under which the child's first advance in intelligence were made should be heeded as far as is practicable.

In all teaching, the arousing of interest and curiosity and the satisfaction of having accomplished, are matters having a vital bearing upon memory-efficiency.

No one can too early learn to exert his own capacities, and to place some confidence in them. They thus improve; and what is learned has connecting links which help later. On the other hand, many of the measures intended to facilitate learning have the general tendency of making learning superficial, and memory correspondingly unstable and contracted.

The eighteenth-century philosopher, Jean Jacques Rousseau, wrote: " I would advise you to contract the child's vocabulary as much as possible." Surely, children should not have words except as representatives of ideas, and these ideas should be clearly defined. The same rule applies to adults, and the same general principles of teaching apply to children and to adults.

Pestalozzi asserted: "When words are committed to the memory, without an adequate explanation being given or required, is the most commodious system for the indolence or ignorance of those who practise upon it as a system of instruction."

Teaching which *suggests*, in conversation, rather than tells, is, if tactfully conducted, an excellent way of connecting ideas in a mind and leading to later reflection. One celebrated educationist, Tanaquil Faber, wrote: " I always examined my scholar before he went to bed, in what he had learned that day; for I take this to be the best means to retain the fugitive ideas, and to strengthen the memory, without which all the studying and reading is but to draw water with a sieve."

Whenever practicable in instruction, the simple should precede the complicated, which is thus found to be composed of simples; the real and concrete should precede the ideal and abstract; and that already known should be made a step to the apprehension, and appreciation, of the erstwhile unknown. For example, in teaching botany, the real plant should be placed before the eyes; *then*, but not until then, attention should be drawn to its parts.

Compounds, if familiar, may be viewed as simples. By revealing that fact, misapprehensions are brought to light, knowledge obtained is more thorough, and acquirements (*e.g.*, right production of voice) can be obtained far more readily; indeed, if this precept be broken, the pupil may never learn,—inasmuch as he never comprehends, nor even—in the true sense—apprehends.

Illustrative teaching, by showing similarities of one thing to another, establishes or deepens impressions, and therefore enhances memory. But the fact must always be borne in mind that analogies are not identities, and are liable to mislead.

As soon as possible, the pupil should derive some advantage from what he or she has learned,—it should be put to use as often and as effectively as possible. The thing to be studied should be examined, taken to pieces, and then—figuratively, when not actually—put together again. Meanwhile interest, reflection and understanding should be brought to bear. This makes one perceive what, in an accomplishment, one should do, and why one should do it.

When an idea is thoroughly grasped, a term or expression should be attached to it, in order to avoid circumlocution in referring to it. Whatever words are used, unless they are clearly understood, are attached to some crude and perhaps entirely erroneous idea; and that connection is often persisted in for many years. Referring to haphazardly-used technical terms, Archbishop Whately, in his *Lessons on Reasoning,* remarked that they can " prove an encumbrance instead of an advantage; just as a suit of clothes would be, if, instead of putting them on and *wearing* them, you were to carry them about in your hand."

As far as practicable, each step in instruction should grow out of its predecessor, and lead up to what is to come after.

If a fact is introduced too early, and, consequently, misjudgment occurs as to itself and its significances, what follows is likely to be tainted through the misconception.

One should endeavour to avoid undoing in later stages what has been established in earlier ones. Nevertheless, this rule cannot hold in science—especially in relation to discovery. Moreover, when facts are interwoven and interdependent, the precept is extremely difficult, or impossible, to follow.

At every step the understanding should be requisitioned to assist the skill. Theory and practice each should accompany and help the other. That measure enhances the merit of the work done; aids remembrance, by associating actions with principles; and gives confidence.

In his essay on *The Sublime and Beautiful,* Edmund Burke declared: " I am convinced that the method of teaching which approaches most nearly to the method of investigation is incomparably the best; since, not content with serving up a few barren and lifeless truths, it leads to the stock on which they grew;

it tends to set the reader himself on the track of invention, and to direct him into those paths in which the author has made his own discoveries."

Tuition which is truly analytical, explanatory, and constructive, trains the understanding and, thereby, enhances memory-efficiency.

The ultimate aim of tuition should be to make the pupil his own mentor; and a sound method achieves that in degree from the start.

Is the following anecdote significant?—Rev. Thomas Scott, the Bible commentator, had presented a copy of his edition of Bunyan's *Pilgrim's Progress,* with *expository notes,* to one of his poor parishioners. Meeting soon after, Scott inquired whether the parishioner had read the book. "Yes, Sir," was the reply. "Do you think you understand it?" "Oh, yes, Sir," was the answer; "and *I hope that before long I shall understand the notes.*"

CHAPTER XI

HOW TO *MASTER* A SUBJECT

> " Universities can give degrees, a king can confer titles; but neither they, nor all the world, can give learning by diploma."—VICESIMUS KNOX, M.A.
>
> (Fellow of St. John's College, Oxford, and Master of Tunbridge School), in *Liberal Education* (1789).

JOHN ABERNETHY, the celebrated surgeon who died rather more than a century ago, was of opinion that his mind could be saturated, so that whatever more he attempted to take in had the effect of ousting something else. Doubtless Abernethy was, in a sense, correct, but I would remark that if, influenced by Abernethy's notion, anyone were to attempt to be content with what he has learned already and to make it his aim to hold on to that, he would thereby be a loser, for he would cause deterioration of his mental capacities as a whole.

The point of importance about Abernethy's notion is that it does apply to ideas within easy reach. Multitudinous ideas " pass through " consciousness, and pressure of duties or other interests may lead to their permanent loss.

Quintilian stated: " Those things which we have once committed to writing, we cease, as it were, to *guard*, and we lose them by thinking them in no danger of being lost.'' But a commonsense procedure is that of taking notes of whatever passes that seems to have an element of particular value to oneself, and to refer to one's notes from time to time. By that means, some particular use (perhaps not realised at the time, or but dimly seen) may become apparent through intervening ideas.

John Hunter declared, on expressing one's ideas in writing: ''It resembles a tradesman taking stock; without which he never knows either what he possesses, or in what he is deficient.'' ''My mind is like a beehive,'' he said to Abernethy, who, in reporting the incident, added this explanation: ''For, in the midst of buzz and apparent confusion, there was great order, regularity of structure, and abundant food, collected with incessant industry from the choicest stores of nature.''

Francis Bacon wrote: ''I am not ignorant of the prejudice imputed to the use of common-place books, as causing a retardation of reading, and some sloth or relaxation of memory. But because it is but a counterfeit thing in knowledge to be forward and pregnant, except a man be deep and full, I hold the entry of common-places to be a matter of great use and essence in studying; as that which assureth copie of invention, and contracteth judgment to a strength. But this is true, that of the *methods* of common-places that I have seen, there is none of any sufficient worth; all of them carrying merely the face of a *school*, and not of a *world*; and referring to vulgar matters and pedantical divisions without all life or respect to action.'' Bacon would probably have approved heartily of John Locke's advice, given later in the seventeenth century.

John Locke recommended the keeping of an index book of *adversaria* or common-places, one page to each subject, the ideas being put down as they occurred. His principle is to review one's "common-places" periodically—weekly, monthly, yearly. By that means the memory is refreshed, the soundness or otherwise of one's ideas can be gauged, and, figuratively, one can ascertain where one stands. Many of the ideas and resultants therefrom become part of one's mental armamentarium. At the end of a year, or other period, whatever remarks may seem worthy of further reflection, are to be marked with a star in the margin and treated as belonging to the next year's review.

As with the notes, so, in the process of reading, marginal pencil-marks may be made with advantage, and these should be reviewed occasionally. From time to time one may read especially the unpencilled passages. Some of these passages, perchance, will yield suggestions useful in the light of one's intervening experience.

Lecturing upwards of a century ago, in Fetter Lane, London, Coleridge spoke of readers as belonging to one of four classes. The first class, he said, resembled an hour-glass, their reading being like the sand which ran in and out, leaving not a vestige behind. The second class of readers resembled a sponge, which imbibes everything, and returns it almost unaltered, only a little dirtier. The third class resembled a jelly-bag, which allows what is pure to pass away, retaining only the refuse and the dregs. The fourth class, to which Coleridge trusted many among his audience belonged, he compared to the slaves in the diamond-mines of Golconda, who, casting aside everything worthless, preserved only the pure gem.

Memory-efficiency is impossible without just classification. Readiness and durability of learning are dependent, to a considerable extent, upon discriminating between the important and the unimportant, and the just selection of central ideas around which to group facts, sorted, it may be, from among much that is worthless.

"Reading," John Locke remarked, "furnishes the mind only with the materials of knowledge, it is thinking makes what we read ours. We are of the ruminating kind, and it is not enough to cram ourselves with a great load of collections; unless we chew them over again they will not give us strength and nourishment."

The use of various books is better than of one only. The main facts are differently brought out and connected, awkward points are better comprehended, and inaccuracies are more likely to be detected. When one senses an omission or error, it should not be ignored, but pains should be taken to get further light.

Whoever can seize and retain the substance of what he reads, and then can bring to bear judgment to compare, to balance, and to investigate, is well on the road towards distinction.

Be thorough. Lord St. Leonards gave to Sir Fowell Buxton this as his reason for his own success: "I resolved, when beginning to read law, to make everything I acquired perfectly my own, and never to go to a second thing until I had entirely accomplished the first. Many of my competitors read as much in a day as I read in a week; but, at the end of twelve months, my knowledge was as fresh as the day it was acquired, while theirs had glided away from recollection."

Discriminately discuss with others, if practicable, what you have learned. That stabilises the memories; reveals different aspects perhaps; increases skill in communicating ideas; makes one's vocabulary more copious; and throughout, the practice favourably influences retention, and readiness of recall. If you have no one suitable with whom to discuss, talk to your reflection in a mirror—as, in effect, is recommended later in this book.

No original mind could doubt the accuracy of Sir Joshua Reynolds when he declared: " The mind is but a barren soil; it is a soil soon exhausted, and will produce no crop, or only one, *unless it be continually fertilized and enriched with foreign matter* . . . The greatest natural genius cannot subsist on its own stock; he who resolves never to ransack any mind but his own, will be soon reduced, from mere barrenness, to the poorest of all imitations; he will be obliged to imitate himself, and to repeat what he has before often repeated."

There is need to know what has been done, in order to know what remains to be done; and many more persons would evince originality if they knew just where to start off.

Mental energy expended on sheer trivialities, is paralysing in tendency; and there is needed restriction of, as well as concentration upon, subjects of interest. Nevertheless, knowledge of one subject is often essential to the throwing of needed light on another. The wider the available selection, the greater the opportunities afforded of progressiveness. Exceptions to supposed rules should be observed and preserved in one way or another. They may be the bases of discovery or invention. A complicated acquisition is but partly new. Old knowledge (*i.e.*, what is included in knowledge previously acquired) is used, and similarities and differences that would otherwise be unrecognised arrest attention. One should endeavour to trace relations between facts new to one, and facts or notions that one previously knew—or thought one knew—or was acquainted with. Watch should be kept for knowledge from any source—reading, conversation and observation.

Perhaps *always*, observance of exceptions is useful. My work brings me into contact with numerous persons of whom I need to remember much. But I don't make any effort to achieve that end, nor to observe. I let happenings soak in. An unexpected expression of face may haunt me, at times, over a long period, and I may eventually see the explanation. May I give just one example? In the year 1911, I was talking to the late Dr. T. R. Allinson, the hygienist, and I told him that I was convinced that the giving of barley-gruel to a child suffering from infantile diarrhœa was an error; that the bowels could not absorb the food whilst they were in a catarrhal condition; and that I was satisfied that the occasional giving of a little water was everything necessary. A curious, sad look passed over his countenance. Why? Was it because Dr. Allinson felt I had lost confidence in his ability? Was it because the truth of what I said humiliated him, the conclusion being so simple? No, I felt convinced it was more than that. Dr. Allinson told me shortly after, that I was right in my judgment regarding infantile diarrhœa; but not until the close of 1918 did I have the clue to the puzzling look. He had four children, a fifth he had lost—it had infantile diarrhœa!

One must refrain from forming a judgment prematurely. Most persons fall into the error of rashly jumping to conclusions from a few observations; then, with preconceived notions in prominence, they view everything else that follows. Medical opinions are extremely prone to this defect.

Data commonly taken for granted, should be scrutinised with particular care. Differences of view, and supposed difficulties of explication, frequently have their origin in beliefs founded upon false data. Charles Darwin said that only twice, in the formulation of an hypothesis, had he neglected to test *all* the data. He had supposed that the eminence of the " authorities " consulted was sufficient warrant; but he found himself mistaken in both instances, and he learned his lesson!

Test as far as possible. In studying chemistry, for example, experiment on your own account. That measure leads to the accumulation of extra and unexpected knowledge; allows of pausing for the examination of side-issues; and teaches from one's own errors of observation and belief. The subject is thus riveted in one's mind, and the relevant memory is greatly enhanced in range and efficiency.

When you are doing something, ask yourself occasionally whether there is anything else that you know that can be turned to good account—preferably then and there—by furthering your end still better than the means you are employing, or are about to employ. Useful invention is not erratic, it is the seeing of what later is apt to be looked upon as " obvious."

Sir Joshua Reynolds, when asked how long he had taken to paint a certain picture, replied. " All my life."

CHAPTER XII

HOW TO MEMORISE LANGUAGES

"You are worth as many men as you know languages."
—Attributed to CHARLES V.

FROM 1774 to 1849 lived Guiseppe Gaspar Mezzofanti, who became a Cardinal. When chaplain in a hospital at Bologna, he was attending wounded soldiers (of Napoleon Bonaparte), and in that capacity discovered his extraordinary linguistic capacity. He was said to have attained such proficiency that he could talk readily in between fifty and sixty languages and dialects. According to Cates: "There was scarcely any European dialect which he did not speak. . . . At the examination of the pupils of the College of the Propaganda, it is customary for each of the young Missionaries of various countries to deliver an oration in his own language. At these meetings Mezzofanti used to converse with almost all the scholars—passing with equal fluency from the dialects of the extreme East—from Irish, which he spoke with ease, to Chinese, of which he was peculiarly fond." Lord Byron wrote of him: "He is a walking polyglot, and ought to have existed at the time of the Tower of Babel as universal interpreter. I tried him in all the tongues of which I knew a single oath, and egad! he astounded me—even to my English."

Exceptional as was Mezzofanti's linguistic ability, its immensity is liable to be over-estimated. A knowledge of Latin and Greek goes a long way in helping the linguist to divine meanings in a variety of other languages; and the same kind of help is obtainable with other groups; and group with group. Moreover, when a mind has become accustomed to linguistic pursuits, it works in those directions far more effectively, especially as success establishes self-confidence. Theodore Parker when a youth was supposed to have a poor memory, but he eventually learned twenty-six languages.

In his novel *The Irrational Knot,* George Bernard Shaw represents a wife as saying of her husband: "You do not suppose that Ned pays *me* compliments. He never did such a thing in his life. No; I first discovered his talent in that direction at Palermo, where I surprised him in an animated discourse with the dark-eyed daughter of an innkeeper there. That was the first conversation in Italian I succeeded in following. A week later I could understand the language as well as he." Please observe the interest!—rather different, of course, from Mezzofanti's.

The greatest linguistic task in existence is that of a babe—who has hereditary predisposition to speech, but does not at first even know that there is such a thing as language. The babe's earliest articulations are instinctive and random; imitative, but meaningless, articulations follow; then occurs a vague understanding of the significance of articulate sounds or words spoken; lastly occurs the intelligent employment of speech.

The fact of having learned one's own language demonstrates the ability to learn another. But how should the task be tackled to the best advantage?

During the 1914-1918 war, for fifteen months I was a prisoner in German hands, and had ample opportunities of observing that the men who acquired the colloquial language most readily were such as were illiterate and rarely if ever read books. Those men were like children; they learned from *hearing,* and often picked up and used what was merely somewhat similar to what they heard. Of course, these men spoke German illiterately, and a German book was meaningless to them.

The attempt, not infrequently made, to learn a language by sole means of a grammar and a dictionary is long, arduous, and always inefficient.

A physicist friend needed to know what a certain German writer had written on optics. Not already knowing German, he set out to read the work alongside a grammar and dictionary; and with such good results that later he was able to detect errors that were made in a published translation by someone who clearly had not a wide knowledge of optics. Nevertheless, the self-imposed task of my friend, however excellently it may have been carried out, did not make him able to converse readily in German.

Ralph Waldo Emerson wrote, in his *Conduct of Life*: "The way to learn German is to read the same dozen pages over and over a hundred times, till you know every word and particle in them, and can pronounce and repeat them by heart."

That carries the matter one step further, speech and memorisation of phrases and sentences being given particular attention. Nevertheless the procedure is incomplete.

Methods that are founded on making the teaching-room representative of one or other country, and conduct all their teaching in the language to be taught, are admirable up to a point; but anything approximating to the mastery of a language includes the ability to understand what one reads in it, the ability to compose in it, and the ability to converse in it.

One need not start as if almost a babe; one can bring to bear effectively the memory of one's own language. Nevertheless, here lies a danger. As one has become accustomed to think in one's own language, there is a tendency to make too much of a prop of it, translating into one's own language what is said in the foreign one, and then forming an answer in one's own language before attempting to speak in the foreign one. That is an error of procedure, and needs to be sedulously avoided. One should attempt from the start to *think*, as far as possible under the circumstances, in the foreign language. For example, one should purposely think of objects by their foreign names, and—bringing speech, hearing, and sight, to bear—should keep the idea of the object well in mind whilst saying or writing the name. That principle can and should be heeded throughout.

The ideal way of learning a foreign language is to study it in the country to which it belongs. One should talk it, write it, and read it. Newspapers are excellent things to study. Their contents are rarely abstruse, any part of their wording is simple, and they touch upon many topics of general interest. Gramophone records help in various respects; and appropriate broadcast lessons, and speeches in foreign languages, are excellent means of facilitating progress.

When a considerable linguistic skill has been acquired, measures may be employed which otherwise are partially or wholly inapplicable.

Some war-correspondents have been known to walk about a ship's deck, whilst on their journey out, and in a few days glean, from natives of a country, so much of the essentials of a language as to be capable of ascertaining the views of the different individuals on a variety of political and other topics.

I knew a German woman, a teacher of languages, who claimed that, unintentionally she had picked up Spanish through hearing it spoken by certain persons in a house where she resided for two or three years; but she had much from which to deduce meanings and structures. She was accustomed to paraphrase passages in six different ways, in any one of the six languages with which she was acquainted. By that procedure she was forced to think of the significances of phrases, and to realise the little differences in the meanings of words commonly looked upon as interchangeable. Thus, by bringing close and comprehensive thought to bear frequently, she attained extraordinary proficiency.

An Italian doctor of literature with whom I was familiar would get " the hang " of a language, preferably in the corresponding country, and then would read through a dictionary reflectively, coupling up, as far as practicable at the time, the words and their meanings, with parallels or contrasts in other languages. When I made the acquaintance of this man, he was well versed in Latin, Greek, Italian, Spanish, Portuguese, French, German, and English.

Carpenter wrote, in his *Mental Physiology*: "It happens to the Writer, as doubtless to many others, that if an unusually long interval elapses without his having occasion to speak French, he finds himself unable to call to mind French words and phrases, which, if spoken to him, or seen in writing, he at once understands; and yet, after being a week or two in France, and in the daily habit of speaking the language, he finds his ideas shaping themselves in French *in the first instance,* without the process of translation. The Physiologist would say that the nerve-tracks which disuse has rendered imperfect, have restored themselves by use; so that the part of the brain which has recorded the Language, has been brought back into ready connection with that which ministers to the current play of ordinary Thought. But a more prolonged disuse gradually produces such a disseverance, that no Volitional effort can bring about the recall of equivalents in a language once even more familiar than that of later years; and yet the Mechanism of the earlier thought is still preserved in working order, ready to be called into action by some unwonted stimulus."

May I remind the reader of the case of which particulars were given by Coleridge? Similar revivals of memories occur in connection with hypnotism also.

Two of the best ways of retaining a language in which there is not an opportunity of conversing, are to *think* in it, and to listen to broadcasts from the corresponding country.

The fallacy of the notion assiduously fostered by some pedants, that if "the dead languages" be learned, the acquisition brings a skill not otherwise attained in the mastery of one's own language, was humorously exposed by William Cobbett, who quoted errors from the English writings of some of the pedants concerned.

In point of fact, much time is almost wasted by unnecessary study of languages. Macklin the actor was once disputing with Samuel Johnson, and the latter quoted Greek. "I do not understand Greek," remarked Macklin. "A man who argues should understand every language," declared Johnson. "Very well," said Macklin, and gave him a quotation from the Irish.

CHAPTER XIII

HOW TO MEMORISE SPEECHES

" Talking and eloquence are not the same; to speak, and to speak well, are two things."—BEN JONSON.

QUINTILIAN, in his *Institutions of Oratory*, wrote: " It is the power of memory that brings before us those multitudes of precedents, laws, judgments, sayings, and facts, of which an orator should always have an abundance, and which he should always be ready to produce. The memory is accordingly not without reason called *the treasury of eloquence*.

" But it is necessary for those who are to plead, not only to retain multitudes of particulars in the memory, but also to have a quick conception of them; not only to remember, after repeated perusals, what they have written, but to observe the order of thoughts and words in even what they have merely meditated; and to recollect the statement of the adverse parts, not necessarily with a view to refute them in the order in which they have been advanced, but to notice each of them in the most suitable place. The ability of speaking extempore seems to me to depend on no other faculty of the mind than this; for, while we are uttering one thought, we have to consider what we are to say next;

and thus, while the mind is constantly looking forward beyond its immediate object, whatever it finds in the meantime it deposits in the keeping as it were of the memory, which, receiving it from the conception, transmits it, as an instrument of intercommunication, to the delivery."

For the purposes of this chapter, speeches fall into four groups, *viz.*, (1) speeches verbally committed to memory previously; (2) speeches memorised verbally in part only; (3) speeches resulting from previous premeditation, the nature of the appeal being decided upon in advance, but not the wording; (4) speeches composed and delivered on the spur of the moment. Only the last type is purely extemporaneous, but the third type and part of the second are often included under the term.

I assume that they were speeches of the fourth type that Quintilian specially had in mind when he referred to "speaking extempore." In any case, the description throughout is intended to refer to acquirements of consummate orators—not of beginners. I emphasise that point especially, because advice I have long been accustomed to give may, at first sight, seem to be at variance with what I have quoted above from Quintilian: I have warned beginners against striving to look ahead when making public speeches. In reality it is no more necessary to know what you will say next than what you will write next. Indeed, starting to make a strictly-extemporaneous speech is similar to starting on a journey, the destination of which you may know but vaguely, or may not have decided upon, or perhaps, may alter, on the spur of the moment, from what you had intended. Moreover, as I attempted to make clear, mental activity at any given time is not confined solely to what is conscious to the individual.

Striving to look ahead, more especially if accompanied by anxiety, is self-defeating; it is in itself a distraction, and is liable to turn *the main line of thought* into another channel. Nevertheless, from the right kind of practice, it becomes possible to arrange, or rearrange, or augment, material whilst one is actually talking.

It is important, however, that one should figuratively surrender oneself to the *line* of thought and expression; one must never *strain* to keep to one's subject—or for any other purpose.

Thomas Henry Huxley, who became one of the finest speakers of his day, said that at first he had had about every fault a speaker could have, except "talking at random and engaging in rhetoric." Nevertheless, when making his first important speech (which he had written and intended to read), he looked at his audience and, turning the manuscript face-downwards on the desk, he spoke without once referring to it—the whole address unwinding itself as from a spindle.

Depend upon it, when you have thoroughly prepared an address, it exists just as truly as if you had committed it to paper; indeed, committing an address to memory, word for word, can be disadvantageous inasmuch as it does not allow of augmentations called for by " feeling the pulse " of one's audience.

Nevertheless, in making a public address, a speaker may not be quite certain as to which of two (or more) ways he ought to take, and thus may lose temporarily the recollection of both ways. Or it may be that his attention is distracted by talking among the audience, or by heckling. The speaker then has an option as to whether he will " break down " entirely, say the first thing he can, or wait—either to allow the lost train to be recovered, or——. If you lose an object, you may often find it by going back to the spot where you remember having last had it. From that spot you merely travel forward in accordance with the association of ideas evoked. Figuratively, you may act similarly if, in making a speech, you are placed in the predicament I described.

The speaker who, when before an audience, is fearful of forgetting what he should say, by so doing not only diverts his own attention and therefore does not say what he ought, he evidences during his delivery and in his pauses the anxiety he feels. During the pauses the mind of the speaker should be working easily and efficiently, and the result is thereby made to show itself in tone, look and gesture. " Silence can be more eloquent than words."

At the commencement of an address, the speaker's delivery should be comparatively slow. That enables the audience to get into the right frame of mind to grasp the ideas meant to be imparted; and the speaker's mind has an opportunity of inviting fluency. On no account should a speaker hurry in what he says. Haste and hurry should not be confounded; more speed is obtainable by holding back (corresponding to what one does when running down a hill), especially when the fluency might lead, and probably would, to excessive speed, which would not allow the audience to grasp so well, nor allow the speaker's mind to present his case so skilfully.

The fact should not be lost sight of that when a speech is extemporaneous, it is nevertheless from memory—not always the words, but the ideas being in the mind, where they are "worked-up," by processes of choice, rejection, and presentation. Again, confidence in the capability of the mind to carry out those processes is essential to complete success.

The speaker who knows his subject must, of necessity, be accustomed to clear, comprehensive, and continuous thinking, and he should make his speech a sort of talking of his thoughts aloud.

The attempt to make up your mind what words you will use in an address is far less important than to decide what *ideas* you desire to drive home, and by what general means—*i.e.*, by what appeal.

A speech should be so connected in itself as to require no "artifices" for remembering at the right moment. It is well, however, for beginners to commit to memory something which they feel will make a good beginning, and something which they feel will make a good ending. In speeches consisting of recited rhetoric, the principle ascribed to Simonides may be useful; but an address ought to be joined together *logically*, so that each part *suggests* its successor.

If any of you who read this book think yourselves potentially incapable of making speeches, I ask you to reflect that, unless dumb, you are continually making them every day. (You may have heard of the old lady who expressed the opinion that a dictionary she had been perusing contained many nice stories, but that they were too short.) You can think; well, cultivate, on the lines recommended in this work, the habit of connected, rational thought, decide upon your subject and speak your thoughts aloud.

Quintilian wrote: " Let the future orator compose with the utmost care, and as much as possible—that is, rather than declaim only *extempore*." That advice is sound. " Reading," stated Francis Bacon, " maketh a full man; conference a ready man; and writing an exact man." Writing gives one an opportunity of weighing words judiciously; and it also is an exercise in the formation of phrases and sentences, some of which are used, partly from habit and partly from choice, when one makes an address.

A lecture should, nay must, have method. If you use cards, or bits of paper, on which main points are written, and then attempt to arrange them in appropriate order as with a " hand " of cards, sections temporarily omitted will occur to you.

Recapitulate the order, and then put connecting ideas.

Memorisation of the lecture will thus be aided, one part suggesting another.

Practice, however, is of importance, and I advise the making of speeches to one's reflection in a mirror. This practice has the advantage of being, in effect, a complete rehearsal, combining tones, looks and gestures.

Moreover, nothing very serious has occurred if one keeps " Mr. " (or " Mrs." or " Miss ") "Reflection" waiting for a few moments at any point; and, maybe, one will sense the beam of satisfaction in his or her face when one is doing well.

CHAPTER XIV

MEMORY AND THE STAGE

"Hold, as 'twere, the mirror up to nature."—SHAKESPEARE.

I SHALL defer until my next chapter much that I might have inserted here.

Unlike the public reciter, as such, an actor may need occasionally to make use of something that peculiarly applies to busy barristers, and which, in a small way, is indispensable to the performance of the trifling duties and observances of everyday life. I refer to the memory "of convenience." The following is an illustrative and suggestive case from Dr. Abercrombie's *Intellectual Powers*:—

"A distinguished theatrical performer, in consequence of the sudden illness of another actor, had occasion to prepare himself, on a few hours' notice, for a part which was entirely new to him; and the part was long and rather difficult. He acquired it in a very short time, and went through with it with perfect accuracy, but immediately after the performance forgot it to such a degree that though he performed the character for several days in succession, he was obliged every day to study it anew. Characters which he had acquired in a more deliberate manner he never forgets, but can perform them at any time without a moment's preparation. When questioned respecting the mental process which he employed the first time he performed this part, he says that he lost sight entirely of the audience, and seemed to have nothing before him but the pages of the book from which he had learnt it; and that, if anything had occurred to interrupt this illusion, he should have stopt instantly.''

I am of opinion that suggestion was much in evidence in the marked inclination to forgetfulness—though, as with judges and barristers, forgetfulness may be a very ordinary phenomenon in connection with memories intended for temporary convenience.

In studying a new part, it is a bad plan to start with the purposive memorisation of words. The character to be portrayed should be gauged first, and the words should be superimposed upon the basis of moods and of actions—real or imaginary. As far as practicable, appropriate tones, looks and gestures should accompany and intersperse the spoken word. Associations are thus established which greatly aid memory.

When memorising parts, some actors employ the artifice of temporarily looking upon articles of furniture as if they were persons. That is useful from the standpoint of remembering positions on the stage, and also connects the recitation with the imaginary person.

The quotation I am about to make bears a close relationship to acting as well as to playwriting. It is from Robert Ingersol, and runs: '' I once had a dream, and in this dream I was discussing a subject with another man. It occurred to me that I was dreaming, and I then said to myself: If this is a dream, I am doing the talking for both sides—consequently, I ought to know in advance what the other man is going to say. In my dream I tried the experiment. I then asked the other man a question, and before he answered made up my mind what the answer was to be. To my surprise, the man did not say what I expected he would, and so great was my astonishment that I awoke."

Ingersol concluded that Shakespeare's wonderful delineations of character were results of doing when awake what he (Ingersol) did when asleep,—"that is, he threw off a character so perfect that it acted independently of him."

Leigh Hunt remarked that a bad actor could be defined as an animal who utters a certain number of sounds to test the patience of a certain number of persons. "The actor of habit," wrote Hunt, "is a gardener, who raises elegant flowers, and distributes gaudy parterres, but knows nothing beyond the surface of the earth. The actor of passions is a miner, who digs into the depth and darkness of the creation, and brings to light its most hidden and valuable stores."

CHAPTER XV

HOW TO MEMORISE VERSE

> " 'Tis not enough his verses to complete,
> In measure, number, or determined feet."—PITT.

GASSENDI, the celebrated philosopher and indefatigable student, mentioned at the beginning of my second chapter, made (it was related) a rule of repeating daily six hundred verses from the several languages with which he was conversant; and could repeat six thousand Latin verses, and all of Lucretius' great poem *De Rerum Naturâ*, which he had memorised. "It is with the memory as with other habits," Gassendi asserted. "If you wish to strengthen it, or to prevent it from becoming enfeebled (as generally happens as old age appears), exercise it continually, and in very early life get as many fine verses by heart as you can—they amuse the mind, and keep it in a certain degree of elevation, that inspires dignity and grandeur of sentiment."

Few persons, except such as have tested themselves, realise how much they have missed in a passage that they have read but not committed to memory. Much that excites admiration when merely read is apt to pass away quickly. Memory of a beautiful poem is the possession of a treasure. But, as wrote Lord Macaulay,

" By poetry we mean not, of course, all writing in verse, nor even good writing in verse. . . . By poetry we mean the art of employing words in such a manner as to produce an illusion on the imagination, the art of doing by words what the painter does by means of colours."

Laboratory experiments have been conducted with the aim of ascertaining whether memorisation of verse is quicker by learning a " poem " in sections or as a whole. Before reposing confidence in the recorded experiments, satisfaction should be given on various points, including the following:—To what extent did custom and expectation enter? Are we to assume that the physical and mental conditions jointly corresponded throughout? Did the tested persons remain equally free from, or were they affected by, distractions of personal origin—due, perhaps to domestic, or social, or business, matters? What was the nature of the composition, and of sections of it, from the standpoints of difficulty and emotion?

Taking the recorded experiments *en bloc*, they yield no definite answers to those queries; and, therefore, it seems to me, surprise should not arise from the inconsistency of the results yielded. In some instances, the verdict, or what is apparently looked upon as a verdict, is in favour of " the whole " method, and sometimes in favour of " the part " method.

Still, there are certain facts, in connection with the experiments, which are deserving of notice. Most persons who set out to memorise verses, read them through (perhaps a few times), dwelling, very naturally, on certain passages, and then learn the whole in sections. That custom evidences the prevalence of the view that thereby a task is eased which, they may even imagine, would be either impracticable or necessarily lengthy if the whole were attempted. Experience on " the whole " method shows that the fear is unfounded, for, despite preconceptions, the verses can be thus mastered.

But here the question arises: Because memorisation can be effected on " the whole " and on " the part " method singly, should one or other of those methods be adhered to throughout? Commonsense answers "Not if, by combining them, better results are procurable." And for reasons which I shall give, I hold that combination is in some measure highly desirable.

Charles Lamb complained of the *spouting* which, he said " withers and blows upon a fine passage " that, " when pawed about by declamatory boys and men," ceased to give any enjoyment. Part of this maltreatment of poems is due to their formation. Rhythm and rhyme, it should be borne in mind, are in themselves aids to memory. Knowing the metrical form that a saying has to assume, a partial hold is already secured by similarity. That compensates, in degree, for any weakness that may happen to exist in the association, but it often leads to sing-song recitation.

Reciting from memory, if properly performed, obliges, or induces, the reciter to reflect upon the words and ideas it is his province to express. Thereby he is enabled to discern more accurately and completely their significances. By abandoning books for the nonce, he is afforded a better opportunity of surrendering himself to the appropriate gestures and facial expressions.

Laboratory experiments in verse-memorisation fail to pay adequate attention to a poem as a whole—the memorising of words is the sole consideration. If one memorise the words of a poem, one necessarily says them, or imagines them said, in *some* way, and attention is focused on the words rather than on the emotional meaning. A poem deals with moods, ideas and pauses. Attention to words first, and expression later, demands disconnecting one set of ideas in order to substitute what was lacking. Moreover, in order not to lose a connection of phrases, a person may have to hurry from phrase to phrase when reciting; and if a trip occur, the reciter may be unable to recover. The connecting links between the phrases of a poem consist of that silence which " is more eloquent than words."

Here one very important point arises. The value of imagination is usually insisted upon; but the direction to conjure-up appropriate mental pictures sometimes leads to misdirection of energy—misdirection that inevitably defeats. The right measure to take is the repeated scanning of the verses until the realisation of their significances brings the appropriate mental pictures. The atmosphere, the moods, the ideas, the words, and the pauses, all combine in the attainment of that end. I would say: Read carefully the selected poem, endeavour to get, as far as possible, the meaning and intention of everything, each part in relation to the whole. During that procedure, partial or entire memorisation of the poem occurs. If there should happen to be, as is probable, any weak points, pay attention to them individually, but in relation to what precedes and what follows—in sentiment as well as in words. You will thus have learned the *poem*, not merely the words which, in a sense, are incidental to it.

If the poem should happen to be long, live into it before leaving it, then repeat once or twice each day until the whole is your very own. Many repetitions on a single occasion are likely to fatigue, and thus bind up the words with an undesirable mood; whereas intervals allow of the advisable "simmering"—"unconscious" brainwork mainly.

CHAPTER XVI

HOW TO MEMORISE MUSIC

"Be assured that the musical art is entirely an art of expression."—ROSSINI.

"Music is the real universal speech of mankind."—
C. J. WEBER.

PIANISTS who play at sight may nevertheless think themselves incapable of playing from memory. Those persons lose sight of the fact that if they were incapable of memorising music, their fiftieth performance of a piece would be no better than their first. They *defeated themselves* so far as playing from memory was concerned, by tending to make an indissoluble association between playing and reading from the music sheet or book. I advise such persons to think, without playing meanwhile, of the music itself, and to imagine its being written down. They thereby can become capable of playing from the imaginary music-sheet.

Rhythm is concerned with the memorisation of music. If the rhythm of a well-known tune be marked by tapping, or by clapping of the hands, that is sufficient, with the generality of persons, to bring to mind the tune itself. A melody is more readily recollected than is recitative. You know the form that has been, or is likely to be, taken; and whatever exceptions occur arrest attention, and are prone to be memorised readily.

Memorisation is of great importance to every musician. A piece cannot be executed aright unless there be due expression, and due expression cannot exist without the observation and heeding of proportions; therefore, without the numerous reins of memory being in hand and under control, execution cannot be at its best.

Such theory as is correct, helps practice by causing the student to observe relationships and connections that might, and probably would, be unrecognised otherwise. It therefore establishes more associations, and thereby memory is assisted, and is more comprehensive. Theory, by classifying, shows how from one thing another may be learned. Performance is made better by it, and musical composition is facilitated. In every direction, interest is established—which, again, assists memory.

The keyboard of a piano looks to the uninitiated like white keys from end to end, and black notes interspersed, at definite distances, in groups of two and three. To the expert it does more—it looks like an arrangement of all the scales, chords and arpeggi; and, by him or her, playing in, or transposing into, any key can be accomplished readily. In order to attain that proficiency, all exercises may well be performed in every key in succession, and preferably chromatically. Further, each piece played may be similarly transposed. From all points of view, practice of this kind assists the pupil, and certainly not least as regards memory.

The best memorisers do not memorise according to absolute pitch, but according to relative. Expressing the matter another way: They play, from ear, and in different keys, whatever they have memorised in the light of chord-progressions. They mentally hear, not merely melodies, but attendant harmonies, and decide upon the key in which they will play—not necessarily the original key. A blind expert *always* plays in that way.

Whoever would facilitate playing from memory should have frequent practice. Playing from memory can be excessive by interfering unfavourably with the ability to play at sight.

Continually playing at sight tends to divert attention from things memorised, or being memorised. Nevertheless, it accustoms to discords and resolutions, and so on, instils a slight knowledge of harmony and composition, and, by suggesting, helps in memorisation.

About thirty-five years ago, I heard Dr. Roland Winn, who was a teacher of the pianoforte, and also a celebrated pianist, say that his musical memory (which, I should remark, was very far above the ordinary) was unfavourably affected by having so much to do with exercises,—the reason was that they formed obstructing associations in his mind.

In order to memorise instrumental music, a good rule is that of twice playing over, before retiring at night, the piece to be memorised. In the first instance, the chord-progression and key-transitions should be carefully observed; and in repeating the piece, mentally or in reality, there must be no strain. During the ensuing rest and sleep, the memory becomes stabilised, and next morning the piece seems "an old acquaintance."

I should emphasise that unduly thinking of one note in a chord is fatal to playing from memory; as, of course, is also any attempt at coercion! The required ideas must be allowed to occur through the associations established. There are many persons who are like Handel in that they compose alongside an instrument. Hoffman said: " When I compose, I sit down to the piano, close my eyelids, and play what I hear." It was reported of Bach that he would not accept as a pupil anyone who could not rely entirely upon imaginary hearing.

With reference to musical composition, the following account of one of the greatest musical geniuses contains some points which I deem suggestive, though most compositions are on a smaller scale. The mental principles involved are likely to be much the same in all persons who have cultivated musical memorising apart from an instrument.

Mozart informed a friend that he was far from understanding his own " way of composing." " When I am, as it were, completely myself, entirely alone, and of good cheer, say, travelling in a carriage, or walking after a good meal, or during the night when I cannot sleep; it is on such occasions that my ideas flow best and most abundantly. *Whence* and *how* they come, I know not, nor can I force them. Those ideas that please me I retain in my memory, and am accustomed (as I have been told) to hum them to myself. . . . Provided I am not disturbed, my subject enlarges itself, becomes methodised and defined, and the whole, though it be long, *stands almost complete and finished in my mind,* so that I can survey it like a fine picture, or a beautiful statue, at a glance. Nor do I hear in my imagination the parts *successively*, but I hear them, as it were, all at once. . . . When I proceed to write down my ideas, I take out of the bag of my memory, if I may use that phrase, what has previously been collected into it in the way I have mentioned. For this reason, the committing to paper is done easily enough."

On the evening before the production of Mozart's opera *Don Giovanni*, the Overture was unwritten, and Mozart was giving himself up to social enjoyment at the house of a friend. About midnight, Mozart retired to his apartment, asked his wife to make some punch and to stay with him in order to keep him awake whilst he composed. She accordingly told him fairy tales and funny stories, and Mozart laughed thereat until the tears came. The punch, however, caused him to become so drowsy that his wife's talking was essential to keeping him awake. Eventually he felt so tired that his wife persuaded him to sleep, promising to awaken him an hour later. She awoke him at five o'clock in the morning, and two hours later the Overture was completed. The copiers set to work at once, and, in the evening, the work was performed without any rehearsal.

In studying voice-production, memory should not be obliged to grasp qualities alone; those qualities should be associated with the appertaining physical happenings. In other words: voice cultivation should be conducted on psycho-physical lines. Moreover, the rules given in the chapter on *Memory-Order* should be observed throughout. There is a first thing to do, a second thing to do, and so on; and if these be observed, secondary automatic actions are readily established.

CHAPTER XVII

MEMORY IN BUSINESS, DOMESTIC AND SOCIAL LIFE

"Life is a great bundle of little things."—
OLIVER WENDELL HOLMES.

EVERY happening of the day requires memory; and in accordance with needs, memory has evolved. Individuals who suffer from poor memory of persons, names, places, articles to be bought, and so on, are not taking the correct means of committing the facts to memory; and the vast majority of such individuals can be convinced, by true *method*, that their fears are ill-founded.

Whatever, either from intensity or repetition, makes a deep impression, is commonly remembered. Automatically, we remember equally well pleasurable and unpleasurable events. Sometimes a seemingly trivial incident is vividly remembered long after it occurred, and an important event may be forgotten. But the trivial event had an interest in our eyes, and the forgetfulness of the important event may be but temporary. Interest is much concerned with memory. You may have heard of the sailor who could mention, severally, all the ports at which his ship had stopped, but the only facts he particularly remembered about any of them related to the public-houses.

If one is interested in one's work, one usually has a good memory where it is concerned; and the same may be said of news-items. The circumstances accompanying the utterance of a phrase, as (for example) by an orator, may fix it indelibly.

For the purpose of remembering a face, look for what distinguishes it from others, for we do not remember *all* of a face. But do not forget that moods, vicissitudes of fortune, and *age*, alter faces. A person may fail to be recognised inasmuch as no account, or insufficient, has been taken of the interval since we last saw him or her. During recent years many ladies have quickly had themselves made almost unrecognisable; and difference of style in clothing can and does confuse memory.

If we write intimately to persons, we are seldom likely to forget their names; the names of persons to whom we are casually introduced are those that we are likely to be prone to forget. When introduced to a person, spell his or her name to yourself, then note some distinguishing features in the person's appearance, actions, and traits of character. Make a point of using the name when talking to the individual. From remembering the name, endeavour, whenever thinking of the person if absent, to think of him or her by name as well as by appearance. The two ideas thus cohere, and either calls up the other by association.

Sometimes one is accosted in the street, by another whose face is familiar, but whose identity and name evade the other's recollection until revived by casual remarks. Moreover, if we wish to remind a person of a happening which he or she has forgotten, we mention various circumstances connected with it, until eventually the whole matter may be remembered. Monuments or other memorials of the dead; trophies; historic remains; all these lead to local associations.

In order to remember forms, likenesses, and places, note distinguishing features. When having a country walk, occasionally look the way opposite from that you are travelling.

A lady came to me, a few years ago, in order, she explained, that I might help herself and, more especially, her husband. She bitterly complained about what she described as " his bad memory," and adduced, as incontrovertible evidence, that, not infrequently, after she had asked him to call at shops she mentioned and to bring home specific articles, he explained, on turning up at night, that he had clean forgotten until too late! The lady seemed rather aggrieved when I pointed out that the lapses of remembrance were not evidences of an intrinsically bad memory; and that, had her husband been in that quandary, he would hardly have been capable of carrying out satisfactorily his duties as general manager of a world-renowned business with forty-six branches.

" Persons who attend too much to little things commonly become incapable of great ones," stated la Rochefoucault. It may as truly be stated that whoever attends habitually to great things, commonly ignores many little things. There is a happy medium.

If on a buying expedition, I prefer to picture in advance going to shops of the kinds where the objects will be bought, and to calculate the number of articles required at each.

Appointments should be written down—but that is not enough! Sir Granville Bantock, the famous composer, was accredited with breaking appointments, leaving persons waiting long, and then, when the matter was mentioned to him, referring to his diary and triumphantly drawing attention to the fact that he had taken a note of the appointment.

I knew a man who, one winter evening, had returned from business and gone upstairs to don evening dress for a function he had arranged to attend. He undressed, forgot his appointment, got into bed, and slept until the next morning.

In looking at a newspaper, ponder for a moment over such things as you feel are worth remembering; or cut out and preserve the relevant accounts. Looking through newspaper cuttings may turn out to be suggestive and a valuable memory-reviver. But, of course, one must remember where the " pigeon-holed " ideas are stored. That precaution gives you an opportunity of forgetting temporarily. Many a person wastes much valuable time through omitting to write down something as to what he wishes to remember. By too sedulous care to remember, he may needlessly reiterate, and may even forget the important in his striving to hold on to the trivial.

If you are accustomed to lose articles temporarily, through laying them about, decide upon some special place where you will deposit them; then repeat the actions of depositing them, and of removing them, a number of times—say twenty. The association of ideas and of actions will thus be established, and if an exception is made as to place, say mentally to yourself *where* the article is, and that will ensure you against forgetting. When one loses an object, the plan of going back to the last spot where one remembers having had it proves successful usually if, from the first spot, one merely travels forward in accordance with the association of ideas evoked.

W. B. Carpenter related the following: "The Manager of a bank in a certain large town in Yorkshire could not find a duplicate key, which gave access to all the safes and desks in the office, and which ought to have been in a place accessible only to himself and to the Assistant-manager. The latter being absent on a holiday in Wales, the Manager's first impression was that the key had probably been taken away by his Assistant in mistake; but on writing to him, he learned to his great surprise and distress, that he had not got the key, and knew nothing of it. Of course, the idea that this key, which gave access to every valuable in the bank, was in the hands of any wrong person, having been taken with a felonious intention, was to him most distressing. He made search everywhere, tried to think of every place in which the key might possibly be, and could not find it. The Assistant-manager was recalled, both he and every person in the bank was questioned, but no one could give any idea of where the key could be. Of course, although no robbery had taken place up to this point, there was the apprehension that a robbery might be committed after the storm had blown over, when a better opportunity might be afforded by the absence of the same degree of watchfulness A first-class detective was then brought down from London, and this man had the fullest opportunity given him of making inquiries; every person in the bank was brought up before him; he applied all those means of investigation which a very able man of this class knows how to employ; and at last he came to the Manager and said, 'I am perfectly satisfied that no one in the bank knows anything about this lost key. You may rest assured that you have put it away somewhere yourself; but you have been worrying yourself so much about it, that you have forgotten *where* you put it away. As long as you worry yourself in this manner, you will not remember it; but go to bed to-night with the assurance that it will be all right; get a good night's sleep; and in the morning you will most likely remember where you have put the key.' This turned out exactly as was predicted. The key was found the next morning in some extraordinarily secure place, which the Manager had not previously thought of, but in which he then felt sure he must himself have put it."

Thackeray, despite his beautiful compositions, confessed that in debate he was often at a loss, but, shortly after leaving his opponent, would remember just the argument that he ought to have adduced. In a debate, don't perpetually "stare hard" at your opponent. If you do, you are thereby made unable to reason to the full. You cramp yourself mentally. It is such cramping that is largely responsible for assenting to, or not rejecting, cunning and bullying "suggestions" that are sometimes put to witnesses in a court of law; and also for the hoodwinking of ignorant and half-witted jurors—and even others.

"Did this really happen, or did I dream it?" is a question one sometimes asks oneself. The tendency to invent ingenious fables explanatory of surrounding happenings is connected with the myth-making tendency which (in the words of Miss Cobbe) "sinks into abeyance in the waking hours of persons in whom the reason has been highly cultivated, and which resumes its sway even over *their* well-tutored brains when they sleep."

The unintentional exercise of the mythopœic faculty is responsible for much gossip, also for legends. Passing a message down a line in army manœuvres demonstrates the extreme difficulty of remaining verbally accurate. "That's how it com'd down to we," explained the countryman.

During the summer of 1919, when I was vocal therapist to the Northern Military Hospitals, a neurologist and I had a long conversation which, I reflected, might have considerable influence on the future. After we parted, I went into a stationer's shop, bought a notebook, and within half-an-hour had commenced to recall that conversation. Omitting everything irrelevant to the main theme, I recorded the remainder *verbatim*—forty-one pages in all. The notebook, which has proved useful, I still have in my possession; and I venture to advise the following of my example.

Wycherley, the playwright, was accustomed, when old, to read himself to sleep, at night, usually in Montaigne, la Rochefoucauld, Seneca, or Gracian—his favourite authors. The next morning he might write verses in which he embodied the ideas he had perused, but without realising that they were borrowed. Pope, who visited him almost every morning and evening during a whole winter, considered the phenomenon mentioned one of the strangest he had ever observed in the human mind. Observant and reflective readers will, I think, be able to trace something very similar, in effect, to Wycherley's behaviour, in some conversations during everyday life—and the infirmity is found in grades.

With decrease of vigour arises difficulty, or impracticability, of forming new associations of ideas, and also a tendency to severance, or obliteration, of associations formed late in life—hence arises what is called " second childhood."

Fatigue has been known to cause complete but temporary loss of the memory of a foreign language.

In *Rational Hypnotism*, I wrote: " In ordinary life, the energy required for dealing with indigestible foods (for example) is found to decrease the mental power, and to such an extent that the memory of one's own name may occasionally evade reproduction. A discovery of that inability not unnaturally leads to feverish and partially paralysing anxiety, which may have far-reaching effects." In a note I gave the following particulars of a case, dissimilar, of forgetfulness, that occurred " since writing the above: " " This patient forgot, whilst in the heart of London, where he lived, and the more he tried to recollect, the more distressed he became. At last he said to himself: ' This will never do. I'll *allow* that missing idea to arise,' and thereupon crossed the road, passed into a café, and asked for some refreshment. Whilst waiting, the forgotten address arose."

Dr. Adam Smith, the political economist whose book on *The Wealth of Nations* is great, was distinguished for his absence of mind, and for muttering to himself when walking in the streets—perhaps because, like another of his type—he liked to talk to a sensible man and he liked a sensible man to talk to him. It is related of him that, one Sunday morning, having walked into his garden at Kirkcaldy, he fell into a reverie. He was clothed in little besides his nightgown, and in that condition trudged along the king's highway until, in the streets of Dunfermline, he was aroused by the church bells which happened to be ringing for evening service. His appearance is said to have excited the utmost astonishment in onlookers. I wonder whether nudists will consider his arrangement of attire was a bad, or a good, omission of memory. "Sam Slick" said that it isn't necessarily those who open their eyes widest who see most.

CHAPTER XVIII

HOW TO FORGET

> " Let us not burden our remembrances
> With a heaviness that's gone."—SHAKESPEARE.
>
> " To be able to enjoy your former life is to live twice over."
> —MARTIAL.

WHEN Simonides of Ceos offered to teach gratuitously to his friend Themistocles his system of mnemonics, the latter replied that what he stood in need of was a system which would have the opposite effect. " I remember what I would not, but I cannot forget what I would," he said.

Considering the extraordinary memory ascribed to Themistocles by Cicero, the offer looks as if, figuratively, Simonides wanted an advertisement by curing a healthy person. However that may have been, under Themistocles' reply lies a profound truth. Everyone recalls much that is useless, or nearly so, and much that is worse than useless. " Forgetfulness," said Dr. Johnson, " is necessary to remembrance. Ideas are retained by renovation of that impression which time is always wearing away, and which new images are striving to obliterate. If useless thoughts could be expelled from the mind, all the valuable parts of our knowledge would more frequently recur, and every recurrence would reinstate them in their proper place."

I remarked that, although the defective *nature* of memory may seem entirely disadvantageous, further examination refutes that notion. What a terrible thing it would be if memories were commonly as vivid as the originals!

The fact that memories alter is sometimes advantageous in cases of griefs. The alterations are affected by moods, and the healthy mind tends to crowd out or to modify favourably the memory-associations. On the other hand, the unhealthy mind, with its morbid moods, tends in the opposite direction. This consideration bears a relationship to remorse (which may have prompted Themistocles' recorded wish), and it implies that supposed memories unearthed by analytic procedure are coloured up—or down. In no case do moods exactly correspond with the original, any more than do relations or incidents—especially if in a non-hypnotic condition.

What seems to be the obvious solution of "How to Forget," is "Don't review; and, as an additional precaution, purposely attend to other matters—the more absorbing the better." Whoever has neglected school-subjects can testify to the efficacy of that procedure—up to a point! Further, the results of work as a distraction are known to many a troubled man and woman. The forgetfulness of the events of earliest childhood through crowding out, and thus inviting atrophy of, useless remembrances, is another illustration.

One way of suppressing recall is connected with pathology,—*viz.*, direct inhibition. But in the forcible holding down of a painful memory, connected memories may be discarded at the same time. There may thus arise paralytic conditions of an arm, of sight or hearing, of speech, or something else,—incurable, in many instances, apart from the revival of the memory of the suppressed incident. Cases of the kind are related in other of my writings: *Hypnotism—the Friend of Man, The Cure of Stammering, Stuttering, and other Functional Speech Disorders,* and so on.

I have been successful, by means of hypnotism, in bringing about forgetfulness of terrible experiences. For example, a lady was persuaded to allow her little girl, of whom she was passionately fond, to be taken to a hospital, there to have her *vermiform appendix* removed. The operation was performed, and the mother was notified that she could see the child. Upon arrival at the hospital, the mother said that she had arrived for that purpose. She was asked to follow the nurse, and was ushered into the mortuary, where, upon a slab, her child lay dead. The nurse had supposed that the mother knew that the child had died suddenly. The terrible shock experienced by the mother was followed by a fear of going out of doors alone. I induced hypnosis and suggested that she would go out, and further, that if she thought of outside, she would also think of other directions than the way to the hospital. The suggestions were successful. That incident occurred before the Great War, and the measures I adopted might, I consider, have been improved upon.

Strained attempts to ignore tormenting memories make them more prominent. Every time one says: "I want to ignore this occurrence but I can't," one makes the memory more insistent. Every time the memory recurs, it brings with it distressing symptoms and a sort of panic.

Perseveration, or insistence of a line of thought, is increased by leaving a matter unsettled. Therefore, when one fears an idea, one will do well by turning it over persistently in the mind, so as to see in what ways it affects one, and why. Calmness commonly follows, perhaps after one outburst of emotion. The normal bearings of the distressing circumstance on the future should be gauged, and plans should be formed accordingly. The matter being thrashed out, attention should then be directed in accordance with one's own judgment, and gradually the subject is practically crowded out of remembrance. When it recurs, it is viewed sanely and with fortitude.

The fact that memory-impressions become modified is concerned with methodical suggestion—especially in relation to hypnotism. Favourable pictures are dwelt upon and intensified, are altered in favour of health and fitness.

After-forgetfulness has been adduced by some writers as evidence of the identity of hypnosis with hysteria. I pointed out, over a quarter of a century ago, that those writers lost sight of the fact that the failure of recollection is during normal life, not during hypnosis. The power of recall during hypnosis is normally increased appreciably—as evidenced by the frequent revival of long-lost memories, some of which were intimately associated with nervous and mental troubles.

The maladjustments of an adult may have their roots in childhood's desires for sympathy, fears then entertained, and so on. If old memories can be resuscitated, as by hypnotism, the adult, and more easily the child, may regain self-confidence, and face current problems courageously.

Vicesimus Knox, in an essay, published in 1779, *On the Pleasures of Reflection,* wrote: "Cicero has remarked that events the most disagreeable, during their immediate influence, give an exquisite satisfaction when their consequences have ceased; and Æneas solaces his companions, under the hardships they endured, with the consideration, that the remembrance of their sufferings would, one day, give them satisfaction. That these sentiments are just is well known to those who have enjoyed the conversation of the soldier. Battles, skirmishes, and sieges, at which, perhaps, he trembled during the action, furnish him with topics of conversation, and sources of pleasure, for the remainder of his life." Surely, a subtle sort of vanity is present in such instances, and recalling of past miseries seems to make the present seem blissful. Whatever cruelty or callousness may have occurred, is lost sight of, or ignored, in the light of the glory—real or supposed.

If a person has a "clear" conscience, that is merely a sign that personal faults are either not realised or not dwelt upon. The dread of being found out, and the feeling of being held in slight estimation by others, are mental conditions often confused with conscientiousness. I once heard a Roman Catholic priest preach against the "sin" of *scrupulosity,*—by which, he explained, he meant troubling oneself about a sin already committed, "confessed," and forgiven; and he referred to Cardinal Wiseman as having been at one time frequently guilty of that "sin." It seems to me that "scrupulosity" evidences a sense of justice in its possessor.

Nevertheless, having realised our own faults, and determined upon improvement, and, it may be, made every reparation possible, the wise course is to cease to dwell upon the matter often, and to turn to positive good the direction of one's thoughts. Sins of omission spring inevitably from the opposite attitude.

Whatever you are afraid to remember should be recalled and faced, its implications should be thought out, and then, with such consideration as should be given to other persons, a satisfactory adjustment should be made. Then the matter should be put aside—temporarily, at any rate.

I am confident, however, that many will feel, with me, that the more completely one can at will remember the past of one's own life, the more reliable is the guide furnished for the future. Reflection upon our past may be a source of some pride; but certainly, if we are just, of some modesty too. We ought to derive useful lessons from reflecting upon our failures as well as upon our successes. Finally: wholesome introspection breeds an understanding sympathy for the defects and shortcomings of others, and a juster, because more comprehensive, estimate of their merits and achievements.

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